

# KaziHealth



*KaziHealth* Risk Assessment Protocol  
Workplace Health Promotion Programme



The *KaziBantu* Project, Healthy Schools for Healthy Communities, has been jointly developed by the following institutions:

1. **University of Basel**, Switzerland
2. **Nelson Mandela University**, South Africa
3. **Swiss Tropical and Public Health Institute**, Switzerland

---

### Sponsor

**Novartis Foundation**, Switzerland

|                    |                                           |
|--------------------|-------------------------------------------|
| Dr Ann Aerts       | Head of Foundation                        |
| Christina Wadhvani | Head of Incubator Models in Public Health |
| Zaahira Gani       | Project Manager                           |

### Contact Information

+41 61 696 23 00

[info@novartisfoundation.org](mailto:info@novartisfoundation.org)

---

### Principal Investigators

Prof Uwe Pühse <sup>1</sup>  
Prof Cheryl Water <sup>2</sup>

### Strategic Consortium

Prof Markus Gerber <sup>1</sup>  
Prof Rosa du Randt <sup>2</sup>  
Prof Jürg Utzinger <sup>3</sup>

### Scientific Partners

Prof Darelle van Greunen <sup>2</sup>  
Dr Peter Steinmann <sup>3</sup>  
Prof Nicole Probst-Hensch <sup>3</sup>

### Project Coordinators

Dr Ivan Müller <sup>1</sup>  
Danielle Smith <sup>2</sup>

### Key Contributors

Larissa Adams <sup>2</sup>  
Nandi Joubert <sup>2</sup>  
Siphesihle Nqweniso <sup>2</sup>  
Stefanie Gall <sup>1</sup>

---

### Advisory Board

|                                   |                                   |
|-----------------------------------|-----------------------------------|
| Alida Veldsman <sup>2</sup>       | Information Technology Specialist |
| Dr Philip Kitching <sup>2</sup>   | Psychologist                      |
| Dr Elizabeth Du Toit <sup>2</sup> | Medical Practitioner              |
| Dr Robert Freercks                | Nephrologist                      |
| Prof Annelie Gresse <sup>2</sup>  | Dietitian                         |
| Kirsten Barkhuizen <sup>2</sup>   | Dietitian                         |
| Dr Lynn Slogrove <sup>2</sup>     | Psychologist                      |

---

### Institutions

Swiss TPH 

Swiss Tropical and Public Health Institute  
Schweizerisches Tropen- und Public Health-Institut  
Institut Tropical et de Santé Publique Suisse

**NELSON MANDELA**  
UNIVERSITY

 **NOVARTIS**

The Novartis  
Foundation



UNIVERSITY OF BASEL  
Department of Sport, Exercise and Health





**KaziHealth Full Assessment Protocol**

|                                                               |                                         |
|---------------------------------------------------------------|-----------------------------------------|
| <b>1. Initial Consultation</b>                                |                                         |
| <b>1.1. Informed Consent</b>                                  |                                         |
| <b>1.2. Personal Information</b>                              |                                         |
|                                                               | <b>1.2.1. Caregiving Responsibility</b> |
|                                                               | <b>1.2.2. Socioeconomic Status</b>      |
|                                                               | <b>1.2.3. Education</b>                 |
|                                                               | <b>1.2.4. Lifestyle Behaviour</b>       |
| <b>1.3. Subjective Perceived Health</b>                       |                                         |
| <b>1.4. Family and Medical History</b>                        |                                         |
| <b>1.5. Physical Activity Readiness Questionnaire (PAR-Q)</b> |                                         |



| 2. Anthropometry and Body Composition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                 |                                                                                                                                                                                                         |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------|-------------|--------|-------------------|-----------|------------|-----------|---------------|-----------|----------------|-----------|---------------|--------------------|--|--|----------------|-------|-----|----------|--------|--------|-----------|--------|--------|
| What? Indicator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Why? Related Outcome                                                                                                                            | How? Data Source                                                                                                                                                                                        | When? Frequency                                                      | Who? Data Collector                                                              | Classification                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| <b>Height and Weight to calculate Body Mass Index (BMI)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | High BMI indicates an increased prevalence of cardiovascular risk factors (hypertension, stroke, diabetes, high blood lipid concentration). (1) | Participant measurement using SECA stadiometer for height measure, and Tanita Bioelectric Impedance Analysis (BIA) for weight measure. BMI is then calculated:<br>Weight (kg) ÷ Height (m) <sup>2</sup> | One trial per assessment.<br><br>Pre- and post-6-month intervention. | Biokineticists (qualified health professionals in exercise and health promotion) | <table border="1"> <thead> <tr> <th>Classification</th> <th>Measurement (kg/m<sup>2</sup>)</th> </tr> </thead> <tbody> <tr> <td>Underweight</td> <td>&lt; 18.5</td> </tr> <tr> <td>Normal</td> <td>18.5-24.9</td> </tr> <tr> <td>Overweight</td> <td>25.0-29.9</td> </tr> <tr> <td>Obese class 1</td> <td>30.0-34.9</td> </tr> <tr> <td>Obese class 2</td> <td>35.0-39.9</td> </tr> <tr> <td>Obese class 3</td> <td>≥ 40.0</td> </tr> </tbody> </table> | Classification                   | Measurement (kg/m <sup>2</sup> ) | Underweight | < 18.5 | Normal            | 18.5-24.9 | Overweight | 25.0-29.9 | Obese class 1 | 30.0-34.9 | Obese class 2  | 35.0-39.9 | Obese class 3 | ≥ 40.0             |  |  |                |       |     |          |        |        |           |        |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                 |                                                                                                                                                                                                         |                                                                      |                                                                                  | Classification                                                                                                                                                                                                                                                                                                                                                                                                                                          | Measurement (kg/m <sup>2</sup> ) |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Underweight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | < 18.5                                                                                                                                          |                                                                                                                                                                                                         |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Normal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 18.5-24.9                                                                                                                                       |                                                                                                                                                                                                         |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Overweight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 25.0-29.9                                                                                                                                       |                                                                                                                                                                                                         |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Obese class 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 30.0-34.9                                                                                                                                       |                                                                                                                                                                                                         |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Obese class 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 35.0-39.9                                                                                                                                       |                                                                                                                                                                                                         |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Obese class 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ≥ 40.0                                                                                                                                          |                                                                                                                                                                                                         |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| <table border="1"> <thead> <tr> <th colspan="3">Waist Circumference</th> </tr> <tr> <th>Classification</th> <th>Women (cm)</th> <th>Men (cm)</th> </tr> </thead> <tbody> <tr> <td>Very low risk</td> <td>&lt; 70</td> <td>&lt; 80</td> </tr> <tr> <td>Low / normal risk</td> <td>70-89</td> <td>80-99</td> </tr> <tr> <td>High risk</td> <td>90-109</td> <td>100-120</td> </tr> <tr> <td>Very high risk</td> <td>&gt; 110</td> <td>&gt; 120</td> </tr> </tbody> </table><br><table border="1"> <thead> <tr> <th colspan="3">Waist-to-Hip Ratio</th> </tr> <tr> <th>Classification</th> <th>Women</th> <th>Men</th> </tr> </thead> <tbody> <tr> <td>Low risk</td> <td>≤ 0.85</td> <td>≤ 0.90</td> </tr> <tr> <td>High risk</td> <td>&gt; 0.85</td> <td>&gt; 0.90</td> </tr> </tbody> </table> | Waist Circumference                                                                                                                             |                                                                                                                                                                                                         |                                                                      | Classification                                                                   | Women (cm)                                                                                                                                                                                                                                                                                                                                                                                                                                              | Men (cm)                         | Very low risk                    | < 70        | < 80   | Low / normal risk | 70-89     | 80-99      | High risk | 90-109        | 100-120   | Very high risk | > 110     | > 120         | Waist-to-Hip Ratio |  |  | Classification | Women | Men | Low risk | ≤ 0.85 | ≤ 0.90 | High risk | > 0.85 | > 0.90 |
| Waist Circumference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                 |                                                                                                                                                                                                         |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Classification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Women (cm)                                                                                                                                      | Men (cm)                                                                                                                                                                                                |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Very low risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | < 70                                                                                                                                            | < 80                                                                                                                                                                                                    |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Low / normal risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 70-89                                                                                                                                           | 80-99                                                                                                                                                                                                   |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| High risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 90-109                                                                                                                                          | 100-120                                                                                                                                                                                                 |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Very high risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | > 110                                                                                                                                           | > 120                                                                                                                                                                                                   |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Waist-to-Hip Ratio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                 |                                                                                                                                                                                                         |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Classification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Women                                                                                                                                           | Men                                                                                                                                                                                                     |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| Low risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ≤ 0.85                                                                                                                                          | ≤ 0.90                                                                                                                                                                                                  |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| High risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | > 0.85                                                                                                                                          | > 0.90                                                                                                                                                                                                  |                                                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |
| <b>Waist and Hip Circumference to calculate Waist-to-Hip Ratio</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | High waist-to-hip ratio indicates high abdominal fat that increases the risk for heart diseases and type two diabetes. (1)                      | Participant measurement using flexible steel tape to measure waist and hip circumferences.                                                                                                              | One trial per assessment.<br><br>Pre- and post-6-month intervention. | Biokineticists (qualified health professionals in exercise and health promotion) |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                  |                                  |             |        |                   |           |            |           |               |           |                |           |               |                    |  |  |                |       |     |          |        |        |           |        |        |



| <p><b>Body Fat Analysis</b></p>                      | <p>Hight body fat percentage places an individual at an increased cardiovascular disease risk, and increased risk of hypertension, diabetes type two, and dyslipidaemia. (1)</p> | <p>Participant measurement using Tanita Bioelectric Impedance Analysis (BIA).</p> | <p>One trial per assessment.<br/><br/>Pre- and post-6-month intervention.</p> | <p>Biokineticists (qualified health professionals in exercise and health promotion)</p> | <table border="1"> <thead> <tr> <th>Classification</th> <th>Women (%)</th> <th>Men (%)</th> </tr> </thead> <tbody> <tr> <td>Athletic</td> <td>8-15</td> <td>5-10</td> </tr> <tr> <td>Good</td> <td>16-23</td> <td>11-14</td> </tr> <tr> <td>Acceptable</td> <td>24-30</td> <td>15-20</td> </tr> <tr> <td>Overweight</td> <td>31-36</td> <td>21-24</td> </tr> <tr> <td>Obese</td> <td>&gt; 36</td> <td>&gt; 24</td> </tr> </tbody> </table> | Classification | Women (%)   | Men (%) | Athletic | 8-15                                  | 5-10           | Good                                         | 16-23   | 11-14 | Acceptable | 24-30 | 15-20 | Overweight | 31-36 | 21-24 | Obese | > 36 | > 24 |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------|---------|----------|---------------------------------------|----------------|----------------------------------------------|---------|-------|------------|-------|-------|------------|-------|-------|-------|------|------|
| Classification                                       | Women (%)                                                                                                                                                                        | Men (%)                                                                           |                                                                               |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |             |         |          |                                       |                |                                              |         |       |            |       |       |            |       |       |       |      |      |
| Athletic                                             | 8-15                                                                                                                                                                             | 5-10                                                                              |                                                                               |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |             |         |          |                                       |                |                                              |         |       |            |       |       |            |       |       |       |      |      |
| Good                                                 | 16-23                                                                                                                                                                            | 11-14                                                                             |                                                                               |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |             |         |          |                                       |                |                                              |         |       |            |       |       |            |       |       |       |      |      |
| Acceptable                                           | 24-30                                                                                                                                                                            | 15-20                                                                             |                                                                               |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |             |         |          |                                       |                |                                              |         |       |            |       |       |            |       |       |       |      |      |
| Overweight                                           | 31-36                                                                                                                                                                            | 21-24                                                                             |                                                                               |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |             |         |          |                                       |                |                                              |         |       |            |       |       |            |       |       |       |      |      |
| Obese                                                | > 36                                                                                                                                                                             | > 24                                                                              |                                                                               |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |             |         |          |                                       |                |                                              |         |       |            |       |       |            |       |       |       |      |      |
| <p><b>Dual-energy X-ray absorptiometry (DXA)</b></p> | <p>Measures bone mineral density and total body composition, and gold standard for body fat percentage. (2)</p>                                                                  | <p>Participant measurement using DXA.</p>                                         | <p>One trial per assessment.<br/><br/>Pre- and post-6-month intervention.</p> | <p>Radiographer (or medical imaging technologist)</p>                                   | <p style="text-align: center;"><b>Bone Mineral Density</b></p> <table border="1"> <thead> <tr> <th>Classification</th> <th>Measurement</th> </tr> </thead> <tbody> <tr> <td>Normal</td> <td>&gt; - 1.0</td> </tr> <tr> <td>Low bone mineral density / osteopenia</td> <td>- 1.0 to - 2.5</td> </tr> <tr> <td>Very low bone mineral density / Osteoporosis</td> <td>&lt; - 2.5</td> </tr> </tbody> </table>                                 | Classification | Measurement | Normal  | > - 1.0  | Low bone mineral density / osteopenia | - 1.0 to - 2.5 | Very low bone mineral density / Osteoporosis | < - 2.5 |       |            |       |       |            |       |       |       |      |      |
| Classification                                       | Measurement                                                                                                                                                                      |                                                                                   |                                                                               |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |             |         |          |                                       |                |                                              |         |       |            |       |       |            |       |       |       |      |      |
| Normal                                               | > - 1.0                                                                                                                                                                          |                                                                                   |                                                                               |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |             |         |          |                                       |                |                                              |         |       |            |       |       |            |       |       |       |      |      |
| Low bone mineral density / osteopenia                | - 1.0 to - 2.5                                                                                                                                                                   |                                                                                   |                                                                               |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |             |         |          |                                       |                |                                              |         |       |            |       |       |            |       |       |       |      |      |
| Very low bone mineral density / Osteoporosis         | < - 2.5                                                                                                                                                                          |                                                                                   |                                                                               |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |             |         |          |                                       |                |                                              |         |       |            |       |       |            |       |       |       |      |      |



| 3. Clinical Examination                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                   |                                                                              |                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      |                      |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------|-----|-----------|-------|-----------------|---------|-------|--------|---------|-------|------------------|---------|-------|----------------------|---------|-------|----------------------|---------|---------|----------------------|-------|-------|
| What? Indicator                                                                                                                                                                                                                                                                                                                                                                                   | Why? Related Outcome                                                                                                                                                                              | How? Data Source                                                             | When? Frequency                                                         | Who? Data Collector                                                               | Classification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |                      |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
| <p><b>Blood Pressure</b></p> <p>Worldwide, estimated to cause 7.5 million deaths. Accounts for 57 million disability adjusted life years (DALYS) or 3.7% of total DALYS. (3)</p> <p>Blood pressure is an independent risk factor for cardiovascular disease and renal disease. Raised blood pressure is a major risk factor for coronary heart disease, ischemic and haemorrhagic stroke. (4)</p> |                                                                                                                                                                                                   | Participant measurement using automatic oscillometric Omron® M6 AC model.    | Three trials per assessment.<br><br>Pre- and post-6-month intervention. | Biokineticists (qualified health professionals in exercise and health promotion). | <table border="1"> <thead> <tr> <th>Classification</th> <th>Systolic (mmHg)</th> <th>Diastolic (mmHg)</th> </tr> </thead> <tbody> <tr> <td>Low</td> <td>&lt; 90</td> <td>&lt; 60</td> </tr> <tr> <td>Optimal</td> <td>90-119</td> <td>60-79</td> </tr> <tr> <td>Normal</td> <td>120-129</td> <td>80-84</td> </tr> <tr> <td>Pre-hypertensive</td> <td>130-139</td> <td>85-89</td> </tr> <tr> <td>Stage 1 hypertension</td> <td>140-159</td> <td>90-99</td> </tr> <tr> <td>Stage 2 hypertension</td> <td>160-179</td> <td>100-109</td> </tr> <tr> <td>Stage 3 hypertension</td> <td>&gt; 180</td> <td>&gt; 110</td> </tr> </tbody> </table> | Classification       | Systolic (mmHg)      | Diastolic (mmHg)         | Low | < 90      | < 60  | Optimal         | 90-119  | 60-79 | Normal | 120-129 | 80-84 | Pre-hypertensive | 130-139 | 85-89 | Stage 1 hypertension | 140-159 | 90-99 | Stage 2 hypertension | 160-179 | 100-109 | Stage 3 hypertension | > 180 | > 110 |
|                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                              |                                                                         |                                                                                   | Classification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Systolic (mmHg)      | Diastolic (mmHg)     |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                              |                                                                         |                                                                                   | Low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | < 90                 | < 60                 |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                              |                                                                         |                                                                                   | Optimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 90-119               | 60-79                |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                              |                                                                         |                                                                                   | Normal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 120-129              | 80-84                |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                              |                                                                         |                                                                                   | Pre-hypertensive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 130-139              | 85-89                |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                              |                                                                         |                                                                                   | Stage 1 hypertension                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 140-159              | 90-99                |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                              |                                                                         |                                                                                   | Stage 2 hypertension                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 160-179              | 100-109              |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
| Stage 3 hypertension                                                                                                                                                                                                                                                                                                                                                                              | > 180                                                                                                                                                                                             | > 110                                                                        |                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      |                      |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
| <p><b>Full Lipid Panel</b></p> <p>Total Serum Cholesterol</p> <p>Low Density Lipoproteins</p>                                                                                                                                                                                                                                                                                                     | <p>Overall, raised cholesterol is estimated to cause 2.6 million deaths and 29.7 million DALYS.</p> <p>Raised total cholesterol is a major risk factor for ischemic heart disease and stroke.</p> | Participant measurement using Alere Afinion AS100 Analyzer Lipid Panel Test. | One trial per assessment.<br><br>Pre- and post-6-month intervention.    | Graduate Nurse or Biokineticists                                                  | <table border="1"> <thead> <tr> <th>Classification</th> <th>Measurement (mmol/L)</th> </tr> </thead> <tbody> <tr> <td colspan="2" style="text-align: center;"><b>Total Cholesterol</b></td> </tr> <tr> <td>Desirable</td> <td>&lt; 5.2</td> </tr> <tr> <td>Borderline High</td> <td>5.2-6.2</td> </tr> <tr> <td>High</td> <td>&gt; 6.2</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                       | Classification       | Measurement (mmol/L) | <b>Total Cholesterol</b> |     | Desirable | < 5.2 | Borderline High | 5.2-6.2 | High  | > 6.2  |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                              |                                                                         |                                                                                   | Classification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Measurement (mmol/L) |                      |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
| <b>Total Cholesterol</b>                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                   |                                                                              |                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      |                      |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
| Desirable                                                                                                                                                                                                                                                                                                                                                                                         | < 5.2                                                                                                                                                                                             |                                                                              |                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      |                      |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
| Borderline High                                                                                                                                                                                                                                                                                                                                                                                   | 5.2-6.2                                                                                                                                                                                           |                                                                              |                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      |                      |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |
| High                                                                                                                                                                                                                                                                                                                                                                                              | > 6.2                                                                                                                                                                                             |                                                                              |                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      |                      |                          |     |           |       |                 |         |       |        |         |       |                  |         |       |                      |         |       |                      |         |         |                      |       |       |



| <p>High Density Lipoproteins<br/>Triglycerides<br/>Non-HDL<br/>Cholesterol-HDL Ratio</p> | <p>Globally, a third of ischaemic heart disease is attributable to high cholesterol. (5)</p> |  |  | <p>(qualified health professionals in exercise and health promotion).</p> | <table border="1"> <tr> <th colspan="2" style="text-align: center;"><b>Low Density Lipoproteins</b></th> </tr> <tr> <td>Optimal</td> <td>&lt; 2.6</td> </tr> <tr> <td>Near Optimal</td> <td>2.6-3.3</td> </tr> <tr> <td>Borderline High</td> <td>3.4-4.1</td> </tr> <tr> <td>High</td> <td>4.2-4.9</td> </tr> <tr> <td>Very High</td> <td>≥ 5</td> </tr> <tr> <th colspan="2" style="text-align: center;"><b>High Density Lipoproteins</b></th> </tr> <tr> <td>Low for Women</td> <td>&lt; 1.0</td> </tr> <tr> <td>Low for Men</td> <td>&lt; 1.3</td> </tr> <tr> <td>High</td> <td>≥ 1.6</td> </tr> <tr> <th colspan="2" style="text-align: center;"><b>Triglycerides</b></th> </tr> <tr> <td>Optimal</td> <td>&lt; 1.7</td> </tr> <tr> <td>Borderline High</td> <td>1.7-2.3</td> </tr> <tr> <td>High</td> <td>2.4-5.6</td> </tr> <tr> <td>Very High</td> <td>≥ 5.7</td> </tr> <tr> <th colspan="2" style="text-align: center;"><b>Non-HDL-C</b></th> </tr> <tr> <td colspan="2">Determined by subtracting HDL cholesterol from total cholesterol.</td> </tr> <tr> <td colspan="2">Non-HDL-C level goal should be 30 mg/dL higher than LDL cholesterol level goal.</td> </tr> </table> | <b>Low Density Lipoproteins</b> |  | Optimal | < 2.6 | Near Optimal | 2.6-3.3 | Borderline High | 3.4-4.1 | High | 4.2-4.9 | Very High | ≥ 5 | <b>High Density Lipoproteins</b> |  | Low for Women | < 1.0 | Low for Men | < 1.3 | High | ≥ 1.6 | <b>Triglycerides</b> |  | Optimal | < 1.7 | Borderline High | 1.7-2.3 | High | 2.4-5.6 | Very High | ≥ 5.7 | <b>Non-HDL-C</b> |  | Determined by subtracting HDL cholesterol from total cholesterol. |  | Non-HDL-C level goal should be 30 mg/dL higher than LDL cholesterol level goal. |  |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--|--|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--|---------|-------|--------------|---------|-----------------|---------|------|---------|-----------|-----|----------------------------------|--|---------------|-------|-------------|-------|------|-------|----------------------|--|---------|-------|-----------------|---------|------|---------|-----------|-------|------------------|--|-------------------------------------------------------------------|--|---------------------------------------------------------------------------------|--|
| <b>Low Density Lipoproteins</b>                                                          |                                                                                              |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| Optimal                                                                                  | < 2.6                                                                                        |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| Near Optimal                                                                             | 2.6-3.3                                                                                      |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| Borderline High                                                                          | 3.4-4.1                                                                                      |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| High                                                                                     | 4.2-4.9                                                                                      |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| Very High                                                                                | ≥ 5                                                                                          |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| <b>High Density Lipoproteins</b>                                                         |                                                                                              |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| Low for Women                                                                            | < 1.0                                                                                        |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| Low for Men                                                                              | < 1.3                                                                                        |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| High                                                                                     | ≥ 1.6                                                                                        |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| <b>Triglycerides</b>                                                                     |                                                                                              |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| Optimal                                                                                  | < 1.7                                                                                        |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| Borderline High                                                                          | 1.7-2.3                                                                                      |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| High                                                                                     | 2.4-5.6                                                                                      |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| Very High                                                                                | ≥ 5.7                                                                                        |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| <b>Non-HDL-C</b>                                                                         |                                                                                              |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| Determined by subtracting HDL cholesterol from total cholesterol.                        |                                                                                              |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |
| Non-HDL-C level goal should be 30 mg/dL higher than LDL cholesterol level goal.          |                                                                                              |  |  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |  |         |       |              |         |                 |         |      |         |           |     |                                  |  |               |       |             |       |      |       |                      |  |         |       |                 |         |      |         |           |       |                  |  |                                                                   |  |                                                                                 |  |



|                                         |                                                                                                                                                                                                                                                                                                                              |                                                                                     |                                                                             |                                                                                                            | <p align="center"><b>Cholesterol / HDL Ratio</b></p> <p>Determined by dividing HDL-C into total cholesterol.</p> <table border="1"> <tr> <td>Optimal</td> <td>1-3.4</td> </tr> <tr> <td>Borderline High</td> <td>3.5-4.9</td> </tr> <tr> <td>High Risk</td> <td>&gt; 5</td> </tr> </table>                                                                                                                           | Optimal        | 1-3.4    | Borderline High | 3.5-4.9                    | High Risk                                      | > 5                  |                             |                                                |                               |       |         |         |          |      |       |       |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------|-----------------|----------------------------|------------------------------------------------|----------------------|-----------------------------|------------------------------------------------|-------------------------------|-------|---------|---------|----------|------|-------|-------|
| Optimal                                 | 1-3.4                                                                                                                                                                                                                                                                                                                        |                                                                                     |                                                                             |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                      |                |          |                 |                            |                                                |                      |                             |                                                |                               |       |         |         |          |      |       |       |
| Borderline High                         | 3.5-4.9                                                                                                                                                                                                                                                                                                                      |                                                                                     |                                                                             |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                      |                |          |                 |                            |                                                |                      |                             |                                                |                               |       |         |         |          |      |       |       |
| High Risk                               | > 5                                                                                                                                                                                                                                                                                                                          |                                                                                     |                                                                             |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                      |                |          |                 |                            |                                                |                      |                             |                                                |                               |       |         |         |          |      |       |       |
| <p><b>Glycated Haemoglobin</b></p>      | <p>Diabetes is largely the result of excess body weight, diet and physical inactivity (6)</p> <p>HbA1c measures average blood sugar level of past 2 – 3 months. (7)</p>                                                                                                                                                      | <p>Participant measurement using Alere Afinion AS100 Analyzer Lipid Panel Test.</p> | <p>One trial per assessment.</p> <p>Pre- and post-6-month intervention.</p> | <p>Graduate Nurse or Biokineticists (qualified health professionals in exercise and health promotion).</p> | <table border="1"> <thead> <tr> <th>Classification</th> <th>mmol/mol</th> <th>%</th> <th>eAG</th> </tr> </thead> <tbody> <tr> <td>Normal</td> <td>&lt; 39</td> <td>&lt; 5.7</td> <td>&lt; 6.5</td> </tr> <tr> <td>Pre-diabetes</td> <td>39-47</td> <td>5.7-6.4</td> <td>6.5-7.6</td> </tr> <tr> <td>Diabetes</td> <td>≥ 48</td> <td>≥ 6.5</td> <td>≥ 7.7</td> </tr> </tbody> </table>                                | Classification | mmol/mol | %               | eAG                        | Normal                                         | < 39                 | < 5.7                       | < 6.5                                          | Pre-diabetes                  | 39-47 | 5.7-6.4 | 6.5-7.6 | Diabetes | ≥ 48 | ≥ 6.5 | ≥ 7.7 |
| Classification                          | mmol/mol                                                                                                                                                                                                                                                                                                                     | %                                                                                   | eAG                                                                         |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                      |                |          |                 |                            |                                                |                      |                             |                                                |                               |       |         |         |          |      |       |       |
| Normal                                  | < 39                                                                                                                                                                                                                                                                                                                         | < 5.7                                                                               | < 6.5                                                                       |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                      |                |          |                 |                            |                                                |                      |                             |                                                |                               |       |         |         |          |      |       |       |
| Pre-diabetes                            | 39-47                                                                                                                                                                                                                                                                                                                        | 5.7-6.4                                                                             | 6.5-7.6                                                                     |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                      |                |          |                 |                            |                                                |                      |                             |                                                |                               |       |         |         |          |      |       |       |
| Diabetes                                | ≥ 48                                                                                                                                                                                                                                                                                                                         | ≥ 6.5                                                                               | ≥ 7.7                                                                       |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                      |                |          |                 |                            |                                                |                      |                             |                                                |                               |       |         |         |          |      |       |       |
| <p><b>Haemoglobin Concentration</b></p> | <p>At first anaemia can be so mild that it goes unnoticed, but symptoms worsen as anaemia worsens. Signs and symptoms of anaemia may vary, depending on the cause, but some common symptoms include fatigue, weakness, dizziness or light-headedness, headaches, shortness of breath, chest pain or cold hands and feet.</p> | <p>Participant measurement using HemoCue 301 Analyzer.</p>                          | <p>One trial per assessment.</p> <p>Pre- and post-6-month intervention.</p> | <p>Graduate Nurse or Biokineticists (qualified health professionals in exercise and health promotion).</p> | <table border="1"> <thead> <tr> <th>Classification</th> <th></th> <th>g/dL</th> </tr> </thead> <tbody> <tr> <td>Non-anaemic (at sea level)</td> <td>Non-pregnant women:<br/>Pregnant women:<br/>Men:</td> <td>≥ 12<br/>≥ 11<br/>≥ 13</td> </tr> <tr> <td>Mild anaemia (at sea level)</td> <td>Non-pregnant women:<br/>Pregnant women:<br/>Men:</td> <td>11-11.9<br/>10-10.9<br/>11-12.9</td> </tr> </tbody> </table> | Classification |          | g/dL            | Non-anaemic (at sea level) | Non-pregnant women:<br>Pregnant women:<br>Men: | ≥ 12<br>≥ 11<br>≥ 13 | Mild anaemia (at sea level) | Non-pregnant women:<br>Pregnant women:<br>Men: | 11-11.9<br>10-10.9<br>11-12.9 |       |         |         |          |      |       |       |
| Classification                          |                                                                                                                                                                                                                                                                                                                              | g/dL                                                                                |                                                                             |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                      |                |          |                 |                            |                                                |                      |                             |                                                |                               |       |         |         |          |      |       |       |
| Non-anaemic (at sea level)              | Non-pregnant women:<br>Pregnant women:<br>Men:                                                                                                                                                                                                                                                                               | ≥ 12<br>≥ 11<br>≥ 13                                                                |                                                                             |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                      |                |          |                 |                            |                                                |                      |                             |                                                |                               |       |         |         |          |      |       |       |
| Mild anaemia (at sea level)             | Non-pregnant women:<br>Pregnant women:<br>Men:                                                                                                                                                                                                                                                                               | 11-11.9<br>10-10.9<br>11-12.9                                                       |                                                                             |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                      |                |          |                 |                            |                                                |                      |                             |                                                |                               |       |         |         |          |      |       |       |

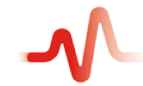




|                                 |                                                |                           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                 |                                                |                           |                               |                                                |                   |
|---------------------------------|------------------------------------------------|---------------------------|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------------------------------------|---------------------------|-------------------------------|------------------------------------------------|-------------------|
|                                 |                                                |                           |  |  | <table border="1"> <tr> <td>Moderate anaemia (at sea level)</td> <td>                     Non-pregnant women:<br/>                     Pregnant women:<br/>                     Men:                 </td> <td>                     8-10.9<br/>                     7-9.9<br/>                     8-10.9                 </td> </tr> <tr> <td>Severe anaemia (at sea level)</td> <td>                     Non-pregnant women:<br/>                     Pregnant women:<br/>                     Men:                 </td> <td>                     &lt; 8<br/>                     &lt; 7<br/>                     &lt; 8                 </td> </tr> </table> | Moderate anaemia (at sea level) | Non-pregnant women:<br>Pregnant women:<br>Men: | 8-10.9<br>7-9.9<br>8-10.9 | Severe anaemia (at sea level) | Non-pregnant women:<br>Pregnant women:<br>Men: | < 8<br>< 7<br>< 8 |
| Moderate anaemia (at sea level) | Non-pregnant women:<br>Pregnant women:<br>Men: | 8-10.9<br>7-9.9<br>8-10.9 |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                 |                                                |                           |                               |                                                |                   |
| Severe anaemia (at sea level)   | Non-pregnant women:<br>Pregnant women:<br>Men: | < 8<br>< 7<br>< 8         |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                 |                                                |                           |                               |                                                |                   |



| 4. Physical Activity and Physical Fitness        |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |                                                                      |                                                                                   |                                    |  |               |  |  |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------|--|---------------|--|--|
| What?<br>Indicator                               | Why?<br>Related Outcome                                                                                                                                                                                                                                                                                   | How?<br>Data Source                                                                                                                                                                                | When?<br>Frequency                                                   | Who?<br>Data Collector                                                            | Classification                     |  |               |  |  |
| <b>Physical Activity</b>                         | Physical inactivity is the fourth leading risk factor for global mortality. Physical inactivity levels are rising with major implications for general health and the prevalence of NCD's such as CVD, diabetes, cancer & their risk factors such as raised BP, raised blood sugar and overweight. (8) (9) | Participant measurement using accelerometer (objectively assessed physical activity) and International Physical Activity Questionnaire (IPAQ-Short Form) (subjectively assessed physical activity) | One trial per assessment.<br><br>Pre- and post-6-month intervention. | Biokineticists (qualified health professionals in exercise and health promotion). | <b>Daily Step Count</b>            |  |               |  |  |
|                                                  |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |                                                                      |                                                                                   | Classification                     |  | Steps per day |  |  |
|                                                  |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |                                                                      |                                                                                   | Sedentary lifestyle                |  | ≤ 5 000       |  |  |
|                                                  |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |                                                                      |                                                                                   | Low active                         |  | 5 001-7 499   |  |  |
|                                                  |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |                                                                      |                                                                                   | Somewhat active                    |  | 7 500-9 999   |  |  |
|                                                  |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |                                                                      |                                                                                   | Active                             |  | 10 000-12 499 |  |  |
|                                                  |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |                                                                      |                                                                                   | Highly active                      |  | ≥ 12 500      |  |  |
|                                                  |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |                                                                      |                                                                                   | <b>Metabolic Equivalent (METs)</b> |  |               |  |  |
|                                                  |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |                                                                      |                                                                                   | Classification                     |  | METs          |  |  |
|                                                  |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |                                                                      |                                                                                   | Light Intensity Physical Activity  |  | < 3           |  |  |
| Moderate Intensity Physical Activity             |                                                                                                                                                                                                                                                                                                           | 3 - < 6                                                                                                                                                                                            |                                                                      |                                                                                   |                                    |  |               |  |  |
| Vigorous Intensity Physical Activity             |                                                                                                                                                                                                                                                                                                           | ≥ 6                                                                                                                                                                                                |                                                                      |                                                                                   |                                    |  |               |  |  |
| <b>WHO Physical Activity Guidelines</b>          |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |                                                                      |                                                                                   |                                    |  |               |  |  |
| Classification                                   |                                                                                                                                                                                                                                                                                                           | Minutes                                                                                                                                                                                            |                                                                      |                                                                                   |                                    |  |               |  |  |
| Light Intensity Physical Activity                |                                                                                                                                                                                                                                                                                                           | < 150 minutes aerobic MPA and < 75 minutes aerobic VPA throughout the week                                                                                                                         |                                                                      |                                                                                   |                                    |  |               |  |  |
| Moderate Intensity Physical Activity             |                                                                                                                                                                                                                                                                                                           | ≥ 150 minutes of aerobic activity throughout the week                                                                                                                                              |                                                                      |                                                                                   |                                    |  |               |  |  |
| Moderate-to-Vigorous Intensity Physical Activity |                                                                                                                                                                                                                                                                                                           | Equivalent combination of MVPA                                                                                                                                                                     |                                                                      |                                                                                   |                                    |  |               |  |  |
| Vigorous Intensity Physical Activity             |                                                                                                                                                                                                                                                                                                           | ≥ 75 minutes of aerobic activity throughout the week                                                                                                                                               |                                                                      |                                                                                   |                                    |  |               |  |  |



|                               |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                   |                                                                      |                                                                                   | <p style="text-align: center;"><b>IPAQ-Short Form</b></p> <table border="1"> <thead> <tr> <th>Classification</th> <th>Criteria</th> </tr> </thead> <tbody> <tr> <td>Inactive</td> <td>&lt; 600 MET-min./week</td> </tr> <tr> <td>Moderately active</td> <td>Three or more days of vigorous activity of at least 20 minutes per day; OR<br/>Five or more days of moderate intensity activity or walking for at least 30 minutes per day; OR<br/>Five or more days of any combination of walking, moderate intensity or vigorous intensity (Minimally active) activities achieving a minimum total PA of at least 600 to 2999 MET-min/week.</td> </tr> <tr> <td>Highly active</td> <td>At least 1.5 – 2 hours of total activity per day, of at least moderate intensity activity; OR<br/>Vigorous intensity activity on at least 3 days achieving a minimum of at least 1500 MET-min/week; OR<br/>Seven or more days of any combination of walking, moderate intensity or vigorous intensity activities achieving a minimum total PA of at least 3 000 MET-min/week.</td> </tr> </tbody> </table> | Classification | Criteria | Inactive | < 600 MET-min./week | Moderately active | Three or more days of vigorous activity of at least 20 minutes per day; OR<br>Five or more days of moderate intensity activity or walking for at least 30 minutes per day; OR<br>Five or more days of any combination of walking, moderate intensity or vigorous intensity (Minimally active) activities achieving a minimum total PA of at least 600 to 2999 MET-min/week. | Highly active | At least 1.5 – 2 hours of total activity per day, of at least moderate intensity activity; OR<br>Vigorous intensity activity on at least 3 days achieving a minimum of at least 1500 MET-min/week; OR<br>Seven or more days of any combination of walking, moderate intensity or vigorous intensity activities achieving a minimum total PA of at least 3 000 MET-min/week. |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------|----------|---------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--------|---------|---------|---------|-----|-----------|--------|--------|--------|--------|-------|-----------|-----------|-----------|-----------|---------|-----------|-----------|-----------|-----------|
| Classification                | Criteria                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                   |                                                                      |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |          |          |                     |                   |                                                                                                                                                                                                                                                                                                                                                                             |               |                                                                                                                                                                                                                                                                                                                                                                             |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |
| Inactive                      | < 600 MET-min./week                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                                                                      |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |          |          |                     |                   |                                                                                                                                                                                                                                                                                                                                                                             |               |                                                                                                                                                                                                                                                                                                                                                                             |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |
| Moderately active             | Three or more days of vigorous activity of at least 20 minutes per day; OR<br>Five or more days of moderate intensity activity or walking for at least 30 minutes per day; OR<br>Five or more days of any combination of walking, moderate intensity or vigorous intensity (Minimally active) activities achieving a minimum total PA of at least 600 to 2999 MET-min/week. |                                                                                                   |                                                                      |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |          |          |                     |                   |                                                                                                                                                                                                                                                                                                                                                                             |               |                                                                                                                                                                                                                                                                                                                                                                             |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |
| Highly active                 | At least 1.5 – 2 hours of total activity per day, of at least moderate intensity activity; OR<br>Vigorous intensity activity on at least 3 days achieving a minimum of at least 1500 MET-min/week; OR<br>Seven or more days of any combination of walking, moderate intensity or vigorous intensity activities achieving a minimum total PA of at least 3 000 MET-min/week. |                                                                                                   |                                                                      |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |          |          |                     |                   |                                                                                                                                                                                                                                                                                                                                                                             |               |                                                                                                                                                                                                                                                                                                                                                                             |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |
| <b>Physical Fitness</b>       | People who are physically fit are healthier, can maintain their most optimum weight, and are also not prone to                                                                                                                                                                                                                                                              | Participant measurement using Cooper 12-minute run test to estimate cardiorespiratory fitness and | One trial per assessment.<br><br>Pre- and post-6-month intervention. | Biokineticists (qualified health professionals in exercise and health promotion). | <p style="text-align: center;"><b>Cooper 12-minute Run Test</b></p> <table border="1"> <thead> <tr> <th colspan="5">Distance (m)</th> </tr> <tr> <th colspan="5">Female Age Categories (years)</th> </tr> <tr> <th>Rating</th> <th>20 – 29</th> <th>30 – 39</th> <th>40 – 49</th> <th>50+</th> </tr> </thead> <tbody> <tr> <td>Excellent</td> <td>&gt; 2700</td> <td>&gt; 2500</td> <td>&gt; 2300</td> <td>&gt; 2200</td> </tr> <tr> <td>Above</td> <td>2200-2700</td> <td>2000-2500</td> <td>1900-2300</td> <td>1700-2200</td> </tr> <tr> <td>Average</td> <td>1800-2199</td> <td>1700-1999</td> <td>1500-1899</td> <td>1400-1699</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                 | Distance (m)   |          |          |                     |                   | Female Age Categories (years)                                                                                                                                                                                                                                                                                                                                               |               |                                                                                                                                                                                                                                                                                                                                                                             |  |  | Rating | 20 – 29 | 30 – 39 | 40 – 49 | 50+ | Excellent | > 2700 | > 2500 | > 2300 | > 2200 | Above | 2200-2700 | 2000-2500 | 1900-2300 | 1700-2200 | Average | 1800-2199 | 1700-1999 | 1500-1899 | 1400-1699 |
| Distance (m)                  |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                   |                                                                      |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |          |          |                     |                   |                                                                                                                                                                                                                                                                                                                                                                             |               |                                                                                                                                                                                                                                                                                                                                                                             |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |
| Female Age Categories (years) |                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                   |                                                                      |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |          |          |                     |                   |                                                                                                                                                                                                                                                                                                                                                                             |               |                                                                                                                                                                                                                                                                                                                                                                             |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |
| Rating                        | 20 – 29                                                                                                                                                                                                                                                                                                                                                                     | 30 – 39                                                                                           | 40 – 49                                                              | 50+                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |          |          |                     |                   |                                                                                                                                                                                                                                                                                                                                                                             |               |                                                                                                                                                                                                                                                                                                                                                                             |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |
| Excellent                     | > 2700                                                                                                                                                                                                                                                                                                                                                                      | > 2500                                                                                            | > 2300                                                               | > 2200                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |          |          |                     |                   |                                                                                                                                                                                                                                                                                                                                                                             |               |                                                                                                                                                                                                                                                                                                                                                                             |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |
| Above                         | 2200-2700                                                                                                                                                                                                                                                                                                                                                                   | 2000-2500                                                                                         | 1900-2300                                                            | 1700-2200                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |          |          |                     |                   |                                                                                                                                                                                                                                                                                                                                                                             |               |                                                                                                                                                                                                                                                                                                                                                                             |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |
| Average                       | 1800-2199                                                                                                                                                                                                                                                                                                                                                                   | 1700-1999                                                                                         | 1500-1899                                                            | 1400-1699                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |          |          |                     |                   |                                                                                                                                                                                                                                                                                                                                                                             |               |                                                                                                                                                                                                                                                                                                                                                                             |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |



|                                 | cardiac and other non-communicable diseases. (10) | handgrip strength measured with a handheld dynamometer to estimate upper body strength. |           |           | <table border="1"> <tr> <td>Below</td> <td>1500-1799</td> <td>1400-1699</td> <td>1200-1499</td> <td>1100-1399</td> </tr> <tr> <td>Poor</td> <td>&lt; 1500</td> <td>&lt; 1400</td> <td>&lt; 1200</td> <td>&lt; 1100</td> </tr> </table><br><table border="1"> <thead> <tr> <th colspan="5">Distance (m)</th> </tr> <tr> <th colspan="5">Male Age Categories (years)</th> </tr> <tr> <th>Rating</th> <th>20 – 29</th> <th>30 – 39</th> <th>40 – 49</th> <th>50+</th> </tr> </thead> <tbody> <tr> <td>Excellent</td> <td>&gt; 2800</td> <td>&gt; 2700</td> <td>&gt; 2500</td> <td>&gt; 2400</td> </tr> <tr> <td>Above</td> <td>2400-2800</td> <td>2300-2700</td> <td>2100-2500</td> <td>2000-2400</td> </tr> <tr> <td>Average</td> <td>2200-2399</td> <td>1900-2299</td> <td>1700-2099</td> <td>1600-1999</td> </tr> <tr> <td>Below</td> <td>1600-2199</td> <td>1500-1899</td> <td>1400-1699</td> <td>1300-1599</td> </tr> <tr> <td>Poor</td> <td>&lt; 1600</td> <td>&lt; 1500</td> <td>&lt; 1400</td> <td>&lt; 1300</td> </tr> </tbody> </table><br><p style="text-align: center;"><b>Handgrip Strength</b></p> <table border="1"> <thead> <tr> <th colspan="4">Gript strength for females (kg)</th> </tr> <tr> <th>Age</th> <th>Poor</th> <th>Normal</th> <th>Good</th> </tr> </thead> <tbody> <tr> <td>20 – 24</td> <td>&lt; 21.5</td> <td>21.5 – 35.3</td> <td>&gt; 35.3</td> </tr> <tr> <td>25 – 29</td> <td>&lt; 25.6</td> <td>25.6 – 41.4</td> <td>&gt; 41.4</td> </tr> <tr> <td>30 – 34</td> <td>&lt; 21.5</td> <td>21.5 – 35.3</td> <td>&gt; 35.3</td> </tr> <tr> <td>35 – 39</td> <td>&lt; 20.3</td> <td>20.3 – 34.1</td> <td>&gt; 34.1</td> </tr> <tr> <td>40 – 44</td> <td>&lt; 18.9</td> <td>18.9 – 32.7</td> <td>&gt; 32.7</td> </tr> <tr> <td>45 – 49</td> <td>&lt; 18.6</td> <td>18.6 – 32.4</td> <td>&gt; 32.4</td> </tr> <tr> <td>50 – 54</td> <td>&lt; 18.1</td> <td>18.1 – 31.9</td> <td>&gt; 31.9</td> </tr> <tr> <td>55 – 59</td> <td>&lt; 17.7</td> <td>17.7 – 31.5</td> <td>&gt; 31.5</td> </tr> <tr> <td>60 – 64</td> <td>&lt; 17.2</td> <td>17.2 – 31.0</td> <td>&gt; 31.0</td> </tr> <tr> <td>65 - 69</td> <td>&lt; 15.4</td> <td>15.4 – 27.2</td> <td>&gt; 27.2</td> </tr> </tbody> </table> | Below | 1500-1799 | 1400-1699 | 1200-1499 | 1100-1399 | Poor | < 1500 | < 1400 | < 1200 | < 1100 | Distance (m) |  |  |  |  | Male Age Categories (years) |  |  |  |  | Rating | 20 – 29 | 30 – 39 | 40 – 49 | 50+ | Excellent | > 2800 | > 2700 | > 2500 | > 2400 | Above | 2400-2800 | 2300-2700 | 2100-2500 | 2000-2400 | Average | 2200-2399 | 1900-2299 | 1700-2099 | 1600-1999 | Below | 1600-2199 | 1500-1899 | 1400-1699 | 1300-1599 | Poor | < 1600 | < 1500 | < 1400 | < 1300 | Gript strength for females (kg) |  |  |  | Age | Poor | Normal | Good | 20 – 24 | < 21.5 | 21.5 – 35.3 | > 35.3 | 25 – 29 | < 25.6 | 25.6 – 41.4 | > 41.4 | 30 – 34 | < 21.5 | 21.5 – 35.3 | > 35.3 | 35 – 39 | < 20.3 | 20.3 – 34.1 | > 34.1 | 40 – 44 | < 18.9 | 18.9 – 32.7 | > 32.7 | 45 – 49 | < 18.6 | 18.6 – 32.4 | > 32.4 | 50 – 54 | < 18.1 | 18.1 – 31.9 | > 31.9 | 55 – 59 | < 17.7 | 17.7 – 31.5 | > 31.5 | 60 – 64 | < 17.2 | 17.2 – 31.0 | > 31.0 | 65 - 69 | < 15.4 | 15.4 – 27.2 | > 27.2 |
|---------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------|-----------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|-----------|-----------|-----------|------|--------|--------|--------|--------|--------------|--|--|--|--|-----------------------------|--|--|--|--|--------|---------|---------|---------|-----|-----------|--------|--------|--------|--------|-------|-----------|-----------|-----------|-----------|---------|-----------|-----------|-----------|-----------|-------|-----------|-----------|-----------|-----------|------|--------|--------|--------|--------|---------------------------------|--|--|--|-----|------|--------|------|---------|--------|-------------|--------|---------|--------|-------------|--------|---------|--------|-------------|--------|---------|--------|-------------|--------|---------|--------|-------------|--------|---------|--------|-------------|--------|---------|--------|-------------|--------|---------|--------|-------------|--------|---------|--------|-------------|--------|---------|--------|-------------|--------|
| Below                           | 1500-1799                                         | 1400-1699                                                                               | 1200-1499 | 1100-1399 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| Poor                            | < 1500                                            | < 1400                                                                                  | < 1200    | < 1100    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| Distance (m)                    |                                                   |                                                                                         |           |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| Male Age Categories (years)     |                                                   |                                                                                         |           |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| Rating                          | 20 – 29                                           | 30 – 39                                                                                 | 40 – 49   | 50+       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| Excellent                       | > 2800                                            | > 2700                                                                                  | > 2500    | > 2400    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| Above                           | 2400-2800                                         | 2300-2700                                                                               | 2100-2500 | 2000-2400 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| Average                         | 2200-2399                                         | 1900-2299                                                                               | 1700-2099 | 1600-1999 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| Below                           | 1600-2199                                         | 1500-1899                                                                               | 1400-1699 | 1300-1599 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| Poor                            | < 1600                                            | < 1500                                                                                  | < 1400    | < 1300    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| Gript strength for females (kg) |                                                   |                                                                                         |           |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| Age                             | Poor                                              | Normal                                                                                  | Good      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| 20 – 24                         | < 21.5                                            | 21.5 – 35.3                                                                             | > 35.3    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| 25 – 29                         | < 25.6                                            | 25.6 – 41.4                                                                             | > 41.4    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| 30 – 34                         | < 21.5                                            | 21.5 – 35.3                                                                             | > 35.3    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| 35 – 39                         | < 20.3                                            | 20.3 – 34.1                                                                             | > 34.1    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| 40 – 44                         | < 18.9                                            | 18.9 – 32.7                                                                             | > 32.7    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| 45 – 49                         | < 18.6                                            | 18.6 – 32.4                                                                             | > 32.4    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| 50 – 54                         | < 18.1                                            | 18.1 – 31.9                                                                             | > 31.9    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| 55 – 59                         | < 17.7                                            | 17.7 – 31.5                                                                             | > 31.5    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| 60 – 64                         | < 17.2                                            | 17.2 – 31.0                                                                             | > 31.0    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |
| 65 - 69                         | < 15.4                                            | 15.4 – 27.2                                                                             | > 27.2    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |           |           |           |           |      |        |        |        |        |              |  |  |  |  |                             |  |  |  |  |        |         |         |         |     |           |        |        |        |        |       |           |           |           |           |         |           |           |           |           |       |           |           |           |           |      |        |        |        |        |                                 |  |  |  |     |      |        |      |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |         |        |             |        |



|  |  |  |  |  | Gript strength for males (kg) |        |             |        |
|--|--|--|--|--|-------------------------------|--------|-------------|--------|
|  |  |  |  |  | Age                           | Poor   | Normal      | Good   |
|  |  |  |  |  | 20 – 24                       | < 36.8 | 36.8 – 56.6 | > 56.6 |
|  |  |  |  |  | 25 – 29                       | < 37.7 | 37.7 – 57.5 | > 57.5 |
|  |  |  |  |  | 30 – 34                       | < 36.0 | 36.0 – 55.8 | > 55.8 |
|  |  |  |  |  | 35 – 39                       | < 35.8 | 35.8 – 55.6 | > 55.6 |
|  |  |  |  |  | 40 – 44                       | < 35.5 | 35.5 – 55.3 | > 55.3 |
|  |  |  |  |  | 45 – 49                       | < 34.7 | 34.7 – 54.5 | > 54.5 |
|  |  |  |  |  | 50 – 54                       | < 32.9 | 32.9 – 50.7 | > 50.7 |
|  |  |  |  |  | 55 – 59                       | < 30.7 | 30.7 – 48.5 | > 48.5 |
|  |  |  |  |  | 60 – 64                       | < 30.2 | 30.2 – 48.0 | > 48.0 |
|  |  |  |  |  | 65 - 69                       | < 28.2 | 28.2 – 44.0 | > 44.0 |



| 5. Psychosocial Health                |                                                                                                                                                 |                                                                                     |                                                                      |                                                                                                                                 |                          |             |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------|
| What?<br>Indicator                    | Why?<br>Related Outcome                                                                                                                         | How?<br>Data Source                                                                 | When?<br>Frequency                                                   | Who?<br>Data Collector                                                                                                          | Classification           |             |
| <b>Health-Related Quality of Life</b> | Quality of life is a broad multidimensional concept that usually includes subjective evaluations of both positive and negative aspects of life. | Participant measurement using Health Related Quality of Life Questionnaire (GHO-12) | One trial per assessment.<br><br>Pre- and post-6-month intervention. | Self-report via questionnaire, facilitated by Biokineticists (qualified health professionals in exercise and health promotion). | Classification           | Measurement |
|                                       |                                                                                                                                                 |                                                                                     |                                                                      |                                                                                                                                 | Asymptomatic             | 0           |
|                                       |                                                                                                                                                 |                                                                                     |                                                                      |                                                                                                                                 | Sub-Clinical Symptomatic | 1 - 3       |
|                                       |                                                                                                                                                 |                                                                                     |                                                                      |                                                                                                                                 | Symptomatic              | 4 - 6       |
|                                       |                                                                                                                                                 |                                                                                     |                                                                      |                                                                                                                                 | Highly Symptomatic       | 7 - 12      |
| <b>Insomnia</b>                       | Increased insomnia results in increased functional impairment, increased health care costs and increased risk of depression. (11)               | Participant measurement using Insomnia Severity Index Questionnaire (ISI)           | One trial per assessment.<br><br>Pre- and post-6-month intervention. | Self-report via questionnaire, facilitated by Biokineticists (qualified health professionals in exercise and health promotion). | Classification           | Measurement |
|                                       |                                                                                                                                                 |                                                                                     |                                                                      |                                                                                                                                 | Asymptomatic             | 0-7         |
|                                       |                                                                                                                                                 |                                                                                     |                                                                      |                                                                                                                                 | Sub-threshold insomnia   | 8-14        |
|                                       |                                                                                                                                                 |                                                                                     |                                                                      |                                                                                                                                 | Moderate insomnia        | 15-21       |
|                                       |                                                                                                                                                 |                                                                                     |                                                                      |                                                                                                                                 | Severe insomnia          | 22-28       |
| <b>Burnout</b>                        | Burnout refers to a negative affective state, which compromises feelings of emotional fatigue, physical                                         | Participant measurement using Shirom-Melamed Burnout Measure (SMBM).                | One trial per assessment.<br><br>Pre- and post-6-month intervention. | Self-report via questionnaire, facilitated by Biokineticists (qualified health professionals in                                 | Classification           | Measurement |
|                                       |                                                                                                                                                 |                                                                                     |                                                                      |                                                                                                                                 | Low burnout symptoms     | < 3.75      |
|                                       |                                                                                                                                                 |                                                                                     |                                                                      |                                                                                                                                 |                          |             |



|                                         | fatigue and cognitive weariness. It depletes energetic resources from cumulative exposure to chronic work and life stresses.<br>(12) (13) |                                                                                                                                                |                                                                      | exercise and health promotion).                                                                                                 | <table border="1"> <tr> <td>Moderate burnout symptoms</td> <td>3.75-4.39</td> </tr> <tr> <td>Clinically significant burnout symptoms</td> <td>≥ 4.40</td> </tr> </table>                                                                                                            | Moderate burnout symptoms | 3.75-4.39 | Clinically significant burnout symptoms | ≥ 4.40      |                         |     |                              |     |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|-----------------------------------------|-------------|-------------------------|-----|------------------------------|-----|
| Moderate burnout symptoms               | 3.75-4.39                                                                                                                                 |                                                                                                                                                |                                                                      |                                                                                                                                 |                                                                                                                                                                                                                                                                                     |                           |           |                                         |             |                         |     |                              |     |
| Clinically significant burnout symptoms | ≥ 4.40                                                                                                                                    |                                                                                                                                                |                                                                      |                                                                                                                                 |                                                                                                                                                                                                                                                                                     |                           |           |                                         |             |                         |     |                              |     |
| <b>Stress</b>                           | Stress results from a failed social reciprocity between high efforts spent and low rewards received.                                      | Effort-Reward Imbalance Questionnaire (ERI-Q)<br>(14) (15) (16) (17)<br><br>General perceived stress (PSS)<br><br>Work-Family Conflict (WAFCS) | One trial per assessment.<br><br>Pre- and post-6-month intervention. | Self-report via questionnaire, facilitated by Biokineticists (qualified health professionals in exercise and health promotion). | <table border="1"> <thead> <tr> <th colspan="2">ERI</th> </tr> <tr> <th>Classification</th> <th>Measurement</th> </tr> </thead> <tbody> <tr> <td>Low work-related stress</td> <td>≤ 1</td> </tr> <tr> <td>Elevated work-related stress</td> <td>&gt; 1</td> </tr> </tbody> </table> | ERI                       |           | Classification                          | Measurement | Low work-related stress | ≤ 1 | Elevated work-related stress | > 1 |
| ERI                                     |                                                                                                                                           |                                                                                                                                                |                                                                      |                                                                                                                                 |                                                                                                                                                                                                                                                                                     |                           |           |                                         |             |                         |     |                              |     |
| Classification                          | Measurement                                                                                                                               |                                                                                                                                                |                                                                      |                                                                                                                                 |                                                                                                                                                                                                                                                                                     |                           |           |                                         |             |                         |     |                              |     |
| Low work-related stress                 | ≤ 1                                                                                                                                       |                                                                                                                                                |                                                                      |                                                                                                                                 |                                                                                                                                                                                                                                                                                     |                           |           |                                         |             |                         |     |                              |     |
| Elevated work-related stress            | > 1                                                                                                                                       |                                                                                                                                                |                                                                      |                                                                                                                                 |                                                                                                                                                                                                                                                                                     |                           |           |                                         |             |                         |     |                              |     |



| 7. Communicable Diseases                                                                                                                                                                                                                                                                                                                                                         |                                                     |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------|--------------------|----------------------------------------|----------------------------------|--------|------------------------------------|---------|----------------------------------------|--------|-----------|--------|---------------------|-------|-----------|---------|
| What?<br>Indicator                                                                                                                                                                                                                                                                                                                                                               | Why?<br>Related Outcome                             | How?<br>Data Source                                                       | When?<br>Frequency | Who?<br>Data Collector                                                                                                                                         | Classification                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| <b>Soil-transmitted helminths</b><br><i>(Ascaris lumbricoides, Trichuris trichiura, hookworm)</i>                                                                                                                                                                                                                                                                                | Soil-transmitted helminths: 5.2 million DALYs. (18) | Participant measurement using the Kato-Katz method                        | Pre-assessment     | Nelson Mandela University Medical Laboratory Science Lab Technicians, facilitated by Biokineticists (qualified professionals in exercise and health promotion) | <table border="1"> <thead> <tr> <th>Organism</th> <th>Light Infection</th> <th>Moderate Infection</th> <th>Heavy Infection</th> </tr> </thead> <tbody> <tr> <td><i>A. lumbricoides</i></td> <td>1-4999</td> <td>5000-49999</td> <td>≥ 50000</td> </tr> <tr> <td>Hookworm</td> <td>1-1999</td> <td>2000-3999</td> <td>≥ 4000</td> </tr> <tr> <td><i>T. trichiura</i></td> <td>1-999</td> <td>1000-9999</td> <td>≥ 10000</td> </tr> </tbody> </table> | Organism        | Light Infection                    | Moderate Infection | Heavy Infection                        | <i>A. lumbricoides</i>           | 1-4999 | 5000-49999                         | ≥ 50000 | Hookworm                               | 1-1999 | 2000-3999 | ≥ 4000 | <i>T. trichiura</i> | 1-999 | 1000-9999 | ≥ 10000 |
|                                                                                                                                                                                                                                                                                                                                                                                  |                                                     |                                                                           |                    |                                                                                                                                                                | Organism                                                                                                                                                                                                                                                                                                                                                                                                                                            | Light Infection | Moderate Infection                 | Heavy Infection    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
|                                                                                                                                                                                                                                                                                                                                                                                  |                                                     |                                                                           |                    |                                                                                                                                                                | <i>A. lumbricoides</i>                                                                                                                                                                                                                                                                                                                                                                                                                              | 1-4999          | 5000-49999                         | ≥ 50000            |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
|                                                                                                                                                                                                                                                                                                                                                                                  |                                                     |                                                                           |                    |                                                                                                                                                                | Hookworm                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1-1999          | 2000-3999                          | ≥ 4000             |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| <i>T. trichiura</i>                                                                                                                                                                                                                                                                                                                                                              | 1-999                                               | 1000-9999                                                                 | ≥ 10000            |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| <table border="1"> <thead> <tr> <th>Classification</th> <th>Measurement</th> </tr> </thead> <tbody> <tr> <td>Clearly negative</td> <td>0</td> </tr> <tr> <td>Clearly positive, but faint line</td> <td>1+</td> </tr> <tr> <td>Clearly positive, with strong line</td> <td>2+</td> </tr> <tr> <td>Strong positive, with very strong line</td> <td>3+</td> </tr> </tbody> </table> | Classification                                      | Measurement                                                               | Clearly negative   | 0                                                                                                                                                              | Clearly positive, but faint line                                                                                                                                                                                                                                                                                                                                                                                                                    | 1+              | Clearly positive, with strong line | 2+                 | Strong positive, with very strong line | 3+                               |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Classification                                                                                                                                                                                                                                                                                                                                                                   | Measurement                                         |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Clearly negative                                                                                                                                                                                                                                                                                                                                                                 | 0                                                   |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Clearly positive, but faint line                                                                                                                                                                                                                                                                                                                                                 | 1+                                                  |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Clearly positive, with strong line                                                                                                                                                                                                                                                                                                                                               | 2+                                                  |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Strong positive, with very strong line                                                                                                                                                                                                                                                                                                                                           | 3+                                                  |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| <table border="1"> <thead> <tr> <th>Classification</th> <th>Measurement</th> </tr> </thead> <tbody> <tr> <td>Clearly negative</td> <td>0</td> </tr> <tr> <td>Clearly positive, but faint line</td> <td>1+</td> </tr> <tr> <td>Clearly positive, with strong line</td> <td>2+</td> </tr> <tr> <td>Strong positive, with very strong line</td> <td>3+</td> </tr> </tbody> </table> | Classification                                      | Measurement                                                               | Clearly negative   | 0                                                                                                                                                              | Clearly positive, but faint line                                                                                                                                                                                                                                                                                                                                                                                                                    | 1+              | Clearly positive, with strong line | 2+                 | Strong positive, with very strong line | 3+                               |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Classification                                                                                                                                                                                                                                                                                                                                                                   | Measurement                                         |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Clearly negative                                                                                                                                                                                                                                                                                                                                                                 | 0                                                   |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Clearly positive, but faint line                                                                                                                                                                                                                                                                                                                                                 | 1+                                                  |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Clearly positive, with strong line                                                                                                                                                                                                                                                                                                                                               | 2+                                                  |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Strong positive, with very strong line                                                                                                                                                                                                                                                                                                                                           | 3+                                                  |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| <b>Schistosomiasis</b><br><i>(Schistosoma haematobium, Schistosoma mansoni)</i>                                                                                                                                                                                                                                                                                                  | Schistosomiasis: 3.3 million DALYs. (19)            | Participant measurement using microhaematuria dipsticks and POC-CCA tests | Pre-assessment     | Nelson Mandela University Medical Laboratory Science Lab Technicians, facilitated by Biokineticists (qualified professionals in exercise and health promotion) | <table border="1"> <thead> <tr> <th>Classification</th> <th>Measurement</th> </tr> </thead> <tbody> <tr> <td>Clearly negative</td> <td>0</td> </tr> <tr> <td>Clearly positive, but faint line</td> <td>1+</td> </tr> <tr> <td>Clearly positive, with strong line</td> <td>2+</td> </tr> <tr> <td>Strong positive, with very strong line</td> <td>3+</td> </tr> </tbody> </table>                                                                    | Classification  | Measurement                        | Clearly negative   | 0                                      | Clearly positive, but faint line | 1+     | Clearly positive, with strong line | 2+      | Strong positive, with very strong line | 3+     |           |        |                     |       |           |         |
| Classification                                                                                                                                                                                                                                                                                                                                                                   | Measurement                                         |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Clearly negative                                                                                                                                                                                                                                                                                                                                                                 | 0                                                   |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Clearly positive, but faint line                                                                                                                                                                                                                                                                                                                                                 | 1+                                                  |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Clearly positive, with strong line                                                                                                                                                                                                                                                                                                                                               | 2+                                                  |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |
| Strong positive, with very strong line                                                                                                                                                                                                                                                                                                                                           | 3+                                                  |                                                                           |                    |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                    |                    |                                        |                                  |        |                                    |         |                                        |        |           |        |                     |       |           |         |





### Bibliography

1. World Health Organization. Physical status: The use and interpretation of anthropometry. 1995.
2. World Health Organization. Who Scientific Group on the Assessment of Osteoporosis At Primary Health. World Health [Internet]. 2007;May(May 2004):1–13. Available from: <http://www.who.int/chp/topics/Osteoporosis.pdf>
3. World Health organization. WHO | Raised blood pressure. World Heal Organ [Internet]. World Health Organization; 2015 [cited 2018 Nov 19]; Available from: [http://www.who.int/gho/ncd/risk\\_factors/blood\\_pressure\\_prevalence\\_text/en/](http://www.who.int/gho/ncd/risk_factors/blood_pressure_prevalence_text/en/)
4. Cifkova R, Erdine S, Fagard R, Farsang C, Heagerty AM, Kiowski W, et al. Practice guidelines for primary care physicians: 2003 ESH/ESC hypertension guidelines. J Hypertens [Internet]. 2003 Oct [cited 2018 Nov 21];21(10):1779–86. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/14508180>
5. World Health Organization. WHO | Raised cholesterol. World Heal Organ [Internet]. World Health Organization; 2015 [cited 2018 Nov 19]; Available from: [http://www.who.int/gho/ncd/risk\\_factors/cholesterol\\_text/en/](http://www.who.int/gho/ncd/risk_factors/cholesterol_text/en/)
6. World Health Organization. WHO Global report on diabetes [Internet]. World Health Organization. World Health Organization; 2017 [cited 2018 Nov 19]. Available from: <http://www.who.int/diabetes/global-report/en/>
7. Getting Tested | Basics | Diabetes | CDC [Internet]. [cited 2018 Nov 19]. Available from: <https://www.cdc.gov/diabetes/basics/getting-tested.html>
8. World Health Organization. Global recommendations on physical activity for health. WHO 2010. 2010. 1-58 p.
9. IPAQ. Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire (IPAQ) – Short and Long Forms, revised on November 2005. Ipaq [Internet]. 2005;(November):1–15. Available from: <https://sites.google.com/site/theipaq/scoring-protocol>
10. Du HY, Newton PJ, Salamonson Y, Carrieri-Kohlman VL, Davidson PM. A review of the six-minute walk test: Its implication as a self-administered assessment tool. Eur J Cardiovasc Nurs [Internet]. European Society of Cardiology; 2009;8(1):2–8. Available from: <http://dx.doi.org/10.1016/j.ejcnurse.2008.07.001>
11. Morin CM, Belleville G, Bélanger L, Ivers H. The Insomnia Severity Index : Psychometric Indicators to Detect Insomnia Cases and Evaluate Treatment Response. Sleep. 2011;34(5):601–8.
12. Melamed S, Shirom A, Toker S, Berliner S, Shapira I. Burnout and risk of cardiovascular disease: Evidence, possible causal paths, and promising research directions. Psychol Bull. 2006;132(3):327–53.
13. Melamed S, Shirom A, Toker S, Shapira I. Burnout and Risk of Type 2 Diabetes: A Prospective Study of Apparently Healthy Employed Persons. Psychosom Med. 2006;68:863–9.
14. Karasek R, Brisson C, Kawakami N, Houtman I, Bongers P, Amick B. The Job Content Questionnaire (JCQ): an instrument for internationally comparative assessments of psychosocial job characteristics. J Occup Health Psychol. 1998;3(4):322–55.
15. Siegrist J. Adverse Health Effects of High-Effort / Low-Reward Conditions. J Occup Health



- Psychol. 1996;1(1):27–41.
16. Siegrist J. Chronic psychosocial stress at work and risk of depression: Evidence from prospective studies. *Eur Arch Psychiatry Clin Neurosci.* 2008;258(SUPPL. 5):115–9.
  17. Siegrist J, Starke D, Chandola T, Godin I, Marmot M, Niedhammer I, et al. The measurement of effort-reward imbalance at work: European comparisons. *Soc Sci Med.* 2004;58(8):1483–99.
  18. Biedermann P, Ekpo UF, Garba A, Langer E, Mathieu E, Midzi N. Spatial and temporal distribution of soil-transmitted helminth infection in sub-Saharan Africa : a systematic review and geostatistical meta-analysis. 2014;3099(14):1–11.
  19. Katz N, Chaves A, Pellegrino J. A simple device for quantitative stool thick-smear technique in *Schistomiasis Mansoni.* 1972;14(6):397–400.



# KaziBantu

*Healthy Schools for Healthy Communities*



[www.KaziBantu.org](http://www.KaziBantu.org)



[www.twitter.com/KaziBantu.com](https://www.twitter.com/KaziBantu.com)



[www.youtube.com/channel/KaziBantu.com](https://www.youtube.com/channel/KaziBantu.com)