

Comprehensive Health and Fitness Assessment Report

Part 1: Health and Fitness Assessment Design (460)

Before any testing was done exercise preparticipation screenings were conducted. The components of pre-exercise evaluation and health screening consists of informed consent (an important legal and ethical consideration), exercise preparticipation health screening (determines an individual's current physical activity level), health history and cardiovascular risk factor analysis. After these were conducted, the Physical Activity Readiness Questionnaire (PAR-Q) was filled out to guide the individuals to flag up and barriers stopping them from participating (Warbuton, 2011).

The first test conducted was the Blood Pressure test (Lab 3.Housh, 2016). This was the most vital test as there is a link between blood pressure and the risk of serious cardiovascular event such as death, stroke, or heart disease which can be increased by engaging in physical activity.

To test for body composition, Anthropometric measurement (Casadei, 2022) tests were used. These tests assess various physical characteristics of the human body, such as height weight, and body circumference. Anthropometric measurements help assess body fat percentage and distribution. Understanding body composition is crucial for understanding metabolic health and offers objective data on body composition. This type of testing is used in both clinical and fitness settings to evaluate risk factors for various health conditions, track fitness progress, and tailor personalised interventions (Casadei, 2022).

The Queen's College Step Test (Lab 9. Housh, 2016) was used to measure cardiovascular fitness. The test is designed to provide quick, easy and accurate VO₂ max predictions. According to Sampaio et al (2024) the step test provides valuable information on cardiorespiratory parameters such as maximal oxygen uptake and heart rate. They then go on to link the step test with cardiorespiratory capacity which is critical to "health related fitness", as recovery of a heart rate after exercise can serve as a predictor of mortality risk.

Muscular strength was tested using the Grip Strength Test. The strength of the hand-finger segment, called grip strength, is recognised as a predictor of the risk of nutritional status imbalances, level and quality of muscle mass, and even psychological disturbances e.g. anxiety according to Huerta Ojeda et al (2021).

Whilst still focusing on the body's muscles, their ability to exert force against a load, consistently and repetitively over a period was tested (Edwards, 2023). The 1-minute Sit Up Test was conducted to assess the endurance of the muscles. This test was chosen as it is important for core stability and back support.

According to the Committee on Fitness Measures and Health Outcomes in Youth (2012) flexibility has been "defined as the motion of muscle and connective tissues at a joint". Flexibility prevents low-back pain, musculoskeletal injury, and improves posture which can all have a positive outcome to an individual. To test flexibility the Sit and Reach test was used, this test measures joint range of motion and in the sit and reach test to assess low-back and upper hamstring flexibility.

Part 2: Assessment Procedures and Data Collection

According to Reham & Hashmi (2022) “the patient should be questioned regarding caffeine consumption, exercise, or smoking. If any of these activities have occurred within the last 30 minutes, blood pressure measurement should be postponed until this period has passed.” this is because blood pressure is easily altered and even the most insignificant activities can result in substantial changes in blood pressure readings. The room was quiet, and the client sat on a chair with back support with both feet flat on the floor with legs uncrossed and the arm was supported at heart level, and the cuff placed snugly on the upper arm (Lab3.Housh, 2016). For automated devices, the cuff inflates automatically, and the digital machine calculates the systolic and diastolic pressures, which are then displayed. After the measurement, a repeat reading may be necessary to confirm accuracy, especially if the result is unusually high or low.

Anthropometric testing involved measuring physical body dimensions to assess health and nutritional status. To measure height, the client stood with heels together and head straight, with a stadiometer’s headpiece gently touching the top of the head, and the measurement is recorded to the nearest millimetre. For weight, the client stood still on a flat surface scale, with their weight recorded to the nearest 0.1 kg or pound. Waist circumference was measured by placing a non-stretchable tape around the abdomen at the level of the navel, ensuring the tape is snug but not tight, and recording the measurement. It was important to ensure the client was relaxed, wearing minimal clothing, and measurements should be consistently taken in the same conditions for accuracy. (Lab 35. Housh, 2016)

The Queen's College Step Test involved a 3-minute step-up-and-down exercise to assess cardiovascular fitness. The client stepped on a 16.25-inch platform at a cadence of 88 beats per minute, stepping up with alternating feet and down in a steady rhythm for the full duration. After completing the test, the clients' heart rate was measured immediately for one full minute to assess recovery. The heart rate recovery was then used to estimate the individual’s aerobic fitness, with a lower recovery rate indicating better cardiovascular health. Required equipment included a step platform, metronome, stopwatch, and a method to measure heart rate (either manually or with a heart rate monitor). (Lab 9. Housh, 2016)

The grip strength test measures the maximum force exerted by an individual’s hand using a hand dynamometer, providing an indication of hand strength and overall muscle function. To begin, the client was seated comfortably with elbow at a 90-degree angle, and wrist in a neutral position. The hand dynamometer was adjusted to fit the clients’ hand. The client was instructed to squeeze the dynamometer as hard as possible, maintaining maximum effort, and the force was recorded in kilograms or pounds. The highest value from the trials was recorded as the result. (Lab 23. Housh, 2016)

The Sit and Reach Test measures flexibility, particularly in the lower back and hamstrings. To perform the test, the client was sat on the floor with their legs fully extended and feet flat against a sit-and-reach box or a measuring line. The feet were about hip width apart, and the toes were pointing straight ahead. The client was instructed to slowly reach forward with both hands as far as possible while keeping the knees extended. The measurement was taken at the point where the client’s fingertips reach. (Lab 40. Housh, 2016)

Part 3: Data Analysis and Interpretation

The clients Blood pressure was measured at 120/ 88 Hmng. Compared to Chobanian (2003) my clients systolic blood pressure of 120 was considered “normal” and her distolic blood pressure of 88 was “prehypertensive”. A normal blood pressure reading indicates that your heart is pumping blood efficiently without putting unnecessary strain on the arteries or organs. Maintaining a normal blood pressure is important for overall cardiovascular health, as high or low blood pressure can increase the risk of heart disease, stroke, and other health problems.

The results below show my clients results for body composition through anthropometric testing:

Height (cm)	170.5		Weight (Km)	68
	1	2	3	Mean
Waist (cm)	73	72	74	73
Hip (cm)	98	100	99	100

According to Copper (1977) my clients cardiovascular fitness is “Good”. This classification comes after scoring 44 in the VO2 max score, using the equation $VO_2 \text{ max (mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}) = 65.81 - (0.1847 \times \text{recovery heart rate in beats per minute})$.

Left	34	35	38
Right	35	35.5	37

The above table contains the resulst of my clients grip strength test. In order to compare my clients results the two highest results: $38 + 37 = 75$. This result is then compared with the Montoye and Lamphiear (1977) Grip arm strength in males and females chart in the colom 20-244 years as my client is 20 years old. The chart shows that my client is in the top 90 percentile rank, which shows a great overall strength in her upper body.

My clients sit and reach test results were 31cm which puts her in the 50th percentile rank which makes her flexibility average/good. Good flexibility, especially in the hamstrings and lower back, contributes to improved mobility, posture, and reduced muscle stiffness. It also lowers the risk of injuries like strains and sprains.

My clients results from the 1-minute sit up test was 29 sit ups which according to Golding (1989) was just in the bottom end of the “ average” colomn for 18-25 year olds. This could be linked with my clients flexibility problem as she was also average in the rank for flexibility in 20 year old females. The lack of flexibility could be a knock on affect with the sit up test as she could possible have muscle stiffness.

Part 4: Recommendations

As my client has good overall health but needs to improve flexibility, a focused approach should combine targeted exercises and lifestyle changes. To enhance flexibility, incorporating static stretching exercises for key muscle groups such as the hamstrings, quadriceps, calves, lower back, and shoulders is essential. These should be done 2-3 times per week, holding each stretch for 20-30 seconds. Dynamic stretching before workouts can improve joint mobility, and activities like yoga and Pilates can support flexibility, balance, and posture. Foam rolling can also be beneficial in releasing tight muscles, particularly in the lower back, calves, and hips.(Page, 2012)

Lifestyle modifications are also important to support flexibility progress. I would encourage my client to stay active throughout the day, adding light movements or stretching breaks to prevent stiffness from prolonged sitting which might be hard as she is a current university student who attends lectures and works (Stathokostas, 2012). While focusing on flexibility, it would be important to maintain my client's strengths in cardiovascular and general fitness. I'd encourage regular aerobic exercises such as walking, running, or swimming, to continue improving endurance and heart health. Additionally, resistance training 2-3 times a week can maintain muscle strength and stability, which supports better posture and further flexibility gains. Ensuring a balanced diet with adequate hydration is crucial for muscle recovery and overall joint health. These would all help my client maintain good health and fitness.

Word count: 1,600

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