

LEVEL 4

SEMESTER 1

MODULE CODE: SHSS4072

Introductory Exercise Physiology

ASSESSMENT TYPE: TRAINING PROGRAMME DESIGN

ASSESSMENT COMPONENTS: 1 AND 2

COMPONENT WEIGHTING: 50% FOR ASSESSMENT 1 AND 50% FOR ASSESSMENT 2

WORD COUNT: 4000 words maximum (approximately 2000 words for each assessment component)

MODULE TUTOR: Dr Simon Williams

Submission Details

Assessment 1:

Using data collected in the laboratory and field practical sessions, you should complete an assessment of the health-related assessment and physical activity of an individual. Your assessment should be summarised in a report that has the following parts:

1. A brief introduction. What is the aim of the report? What is the context (i.e. what is health-related fitness and why is it important?).
2. A description of each method that has been used to collect the data on the subject. This should be written in the past tense and include sufficient detail that the testing procedures and protocols could be replicated other people.
3. A tabulated summary of the health-related fitness profile, including a comparison with appropriate standards or cut-off points. The individual should not be named in the report.
4. A discussion of the health-related fitness profile, for example, you may say that there is evidence that greater muscle strength is related to a lower risk of mortality. In which case, you should provide the reference for this research.
5. A concluding summary.

Assessment 1 Feedback Sheet

Student No./Name:
Module: Introductory Exercise Physiology
Module Code: SHSS4072
Hand-In: by 10th January 2020

Personal Evaluation – to support your academic progress please complete the section below **BEFORE** submitting your work

What do you consider to be the best aspects of this work?	The detail included in the method, I believe it is clear and easy to follow.								
Which aspects do you consider could have been improved in this piece of work?	The table of results as there could have been more normative values added but I struggled to find them, especially from a reliable source.								
What have you found most satisfying whilst undertaking this submission?	Being able to write a detailed and clear method.								
ASSESSMENT CRITERIA	Learning outcome	GRADE							
		Poor 0 - 25%	Unsatisfactory 26 - 39%	Satisfactory 40 - 49%	Good 50 - 59%	Very Good 60 - 69%	Excellent 70 - 85%	Exceptional 86 - 100%	
Introduction (5%)	1, 2								
Description of the methods of assessment (30%)	1, 2								
Summary of health-related fitness profile (30%)	1, 2								
Discussion of the health-related fitness of the subject (30%)	1, 2								
Academic writing and referencing (5%)	1, 2								
It is expected that students will present work that is proof read and follows the School Reference Guide and Assessment Checklist . Therefore a range of 0 – 10 marks will be deducted for non-completion of any of the points on the checklist below .									
TUTOR COMMENTS:									
Submission date: 10/01/2020		Return date: (within 4 weeks of submission date)		Tutor: Dr Simon Williams			Mark:		

Assessment 2:

For the first assessment of this module you have completed a health-related fitness and physical activity profile of an individual. In this assignment you should produce a physical activity programme for this individual which is based upon their health-related fitness report, the evidence-based recommendations for physical activity and the principles of training programme design.

This report should include the following information:

1. A brief summary of the health-related fitness profile of the subject.
2. An overview of the aims and objectives of the physical activity programme you have designed.
3. A description of the responses to exercise.
4. A physical activity programme that is based on evidence-based guidelines and/or other forms of scientific evidence. This should include consideration of any health and safety risk associated with the programme and how this will be controlled.

Consider setting-out your physical activity programme using a table based on the principles of training (i.e. frequency, intensity, type and duration, progression). How and when would you retest your subject to determine if any improvement has taken place? How will you decide when a change has taken place? What recommendations are you following?

5. References

SUBMISSION DETAILS: Via Turnitin by 10th January 2020

Assessment 2 Feedback Sheet

Student No./Name:
Module: Introductory Exercise Physiology
Module Code: SHSS4072
Hand-In: by 10th January 2020

Personal Evaluation – to support your academic progress please complete the section below **BEFORE** submitting your work

What do you consider to be the best aspects of this work?	The structure of the programme that allows for all types of fitness the subject needs whilst also incorporating the goal of being able to run a half marathon.
Which aspects do you consider could have been improved in this piece of work?	A description of how to perform the exercises listed in the programme. However, I feel they are not needed as the subject already knows how to perform the exercises as the programme is tailored to them.
What have you found most satisfying whilst undertaking this submission?	I enjoyed structing a workout programme that fit what the subject needed as well as being able to train them towards a goal that they wanted to achieve.

ASSESSMENT CRITERIA	Learning outcome	GRADE							
		Poor 0 - 25%	Unsatisfactory 26 - 39%	Satisfactory 40 - 49%	Good 50 - 59%	Very Good 60 - 69%	Excellent 70 - 85%	Exceptional 86 - 100%	
Overview of health-related fitness profile of subject (5%)	1, 2								
Aims and objectives of the physical activity programme (10%)	1, 2								
Description of responses to exercise (20%)	1, 2								
Physical activity programme (60%)	1, 2								
Academic writing and referencing (5%)	1, 2								

It is expected that students will present work that is proof read and follows the School **Reference Guide** and **Assessment Checklist**. Therefore a range of 0 – 10 marks will be deducted for non-completion of any of the points on the **checklist below**.

TUTOR COMMENTS:

Submission date: 10/01/2020

Return date:
(within 4 weeks of submission date)

Tutor: Dr Simon Williams

Mark:

Assignment Checklist

- ✓ Please complete the **Personal Evaluation** section of the Assessment Feedback sheet, add your name and details, and paste the whole of this assignment document into the front of your assignment
- ✓ Submission is a **single word file, clearly labelled** with your name and module code
- ✓ Font style - Times New Roman, size -12 for text and 14 for headings
- ✓ Ink colour – black only
- ✓ Line spacing – 1.5 line spacing and 2cm- 2.5cm page margins
- ✓ Quotations more than three lines to be indented 1 line spacing
- ✓ One line space between paragraphs, paragraphs must be left aligned
- ✓ Pagination (your assignment should have **page numbers**)
- ✓ All tables and figures are internally referenced and have a title
- ✓ **Word count** checked and written at end of text (before references and any appendix)
- ✓ Assignment is within 10% of the word limit (excluding references and any appendices)
- ✓ **All** references in the text are included in the reference list
- ✓ **Correct referencing following the Harvard style, as described in the Palgrave study skills book ‘Cite them Right’.**
- ✓ Correct spelling using **UK English**
- ✓ Correct use of punctuation
- ✓ Grammar and syntax correct- double check anything that has a green line under it
- ✓ I have read my assignment out loud to myself and it makes sense and is easy to read

✓ Somebody else has read my work and it makes sense to him or her!

✓ **I have checked and I have not plagiarised**

Failure to follow these guidelines will cost you marks

Report of Health-Related Fitness for Subject A

1 Introduction

Health-related fitness is fitness that is aimed at improving and maintaining one's physical health through the means of exercise, specifically cardiovascular, resistance, flexibly and endurance exercises (LoveToKnow Corp 2018). Health-related fitness is important for everyone, it does not matter who the person is, whether they are a child, adult or elderly person, it is just as important that these exercises are performed in order for one to live a happy and healthy life (Ganley et al 2011). The reason for the importance of health-related fitness in different age groups can vary, for example, the fitness of a child can affect the risk of cardiovascular disease, metabolic disease and can affect the health of growing bones as well as the child's academic performance (Ganley et al 2011).

Poor health related fitness is shown to increase the risk of one getting cardiovascular disease and increases the risk of premature death (Høj 2017). With poor levels of exercise, one will start to develop diseases that will inhibit a healthy life, with little exercise fatty deposits in and around the heart and arteries will start to develop leading towards cardiovascular disease and ultimately a premature death (NHS 2018).

2 Aims & Objectives

This report was aimed at reviewing the data for sex, age, blood pressure, resting heart rate, estimated VO₂ max, bicep skinfolds and relative body fat percentage collected for subject A and to determine the health-related fitness of the subject. The activity levels of the subject will also be evaluated within this report.

In order to determine the health-related fitness and activity levels of subject A, the results gathered will be compared against the reference value guidelines for people of the same age and sex as the subject.

3 Method

3.1 Height, Weight and BMI

Height was measured with a stadiometer and was recorded to the nearest 0.1cm. The subject took off any footwear and positioned their feet at the base of the stadiometer with their back straight against the ruler and head facing forwards. The sliding horizontal headpiece was then brought down to be touching the subjects head and a reading was taken.

Weight was measured with a Seca electronic weighing scale which was accurate to the nearest 0.01kg. The subject removed any footwear along with any weighty objects that could be removed such as mobile phones, wallet, keys, jewellery etc.

BMI was calculated by taking the body weight value in kg and dividing it by the height value in m².

3.2 Waist and Hip Circumferences

Waist circumference was measured with a Seca 201 circumference measuring tape which was accurate to the nearest 0.1cm. The subject removed or lifted their t-shirt or top to halfway up their body. The sides of the subject were palpitated until the top of the pelvis bone could be felt on either side. Once this was felt the waist measurement was taken by putting the measuring tape around the subject's waist inline with the top of the pelvis bone.

Hip circumference was measured with a Seca 201 circumference measuring tape which was accurate to the nearest 0.1cm. The subject put their feet together whilst the measuring tape was wrapped around the largest part of the buttocks and a measurement was taken.

3.3 Skinfolds and Body Composition

Skinfolds were measured with Harpenden skinfold callipers which were accurate to the nearest 0.1mm. The first skinfold measurement that was taken was the tricep skinfold. This was done with the subject stood in the anatomical position with their t-shirt or top taken off. The landmark was first done on the subject's arm by marking the centre point between the bony part on the end of the shoulder and the elbow and was marked using a marker pen. The subject made sure their arm was relaxed and then their tricep was pinched with the thumb and forefinger on the landmark and a measurement was taken by applying the skinfold callipers to the pinched skin.

The second skinfold measurement that was taken was the bicep skinfold. This was done with the subject stood in the anatomical position with their t-shirt or top taken off the same as the tricep skinfold. The landmark was then marked on the bicep, this was done when the landmark from the tricep skinfold was followed round the front of the arm and marked on the centre of the bicep. The subject made sure their arm was relaxed and then their bicep was pinched with the thumb and forefinger on the landmark and a measurement was taken by applying the skinfold callipers to the pinched skin.

The third skinfold measurement that was taken was the subscapular skinfold. This was done with the same conditions as the previous skinfolds. The landmark was marked by locating the bottom point of the shoulder blade. Once this was done the measurement was taken by pinching the marked area with the thumb and forefinger and then using the skinfold callipers on the pinched skin.

The final skinfold measurement that was taken was the suprailiac skinfold. This was again done with the same conditions as the previous skinfolds. The landmark was marked at the intersection of the front of the iliac crest and the front of the armpit. The skinfold measurement was then taken by pinching the area of the suprailiac that was marked using the thumb and forefinger and then the skinfold callipers were used on the pinched skin.

Body composition was calculated by using the Durmin and Womersley skinfold regression equations (1974) to first give us the body density in g/ml. The equation used was $1.163 - (0.063 \times \log \Sigma 4)$. The body density value was then taken and used to calculate body fat percentage by using the equation $((4.95 / \text{body density}) - 4.5) \times 100$. Fat mass was calculated using the equation $64 - (20 \times \text{height} / \text{waist circumference})$ and fat-free mass was calculated using the equation $\text{weight (kg)} \times (1 - (\text{body fat percentage} / 100))$.

3.4 Blood Pressure, Heart Rate and VO₂ Max Test

The first measurement that was taken was the systolic and diastolic blood pressure and the resting heart rate of subject A using a Boso medicus standard upper arm blood pressure monitor. The subject was made to sit down and relax for five minutes to calm themselves. Their sleeve was then rolled up on their left arm and the blood pressure monitor sleeve was placed over the bicep of the subject and the monitor turned on. The blood pressure and heart rate readings were taken down and repeated a further two times on the same arm and then taken three times on the right arm.

The estimation of maximal oxygen consumption by submaximal cycle ergometry was calculated using a Polar Bluetooth Smart heart rate sensor and a Monark 894E Ergonomic Peak exercise bike. The subject lifted their t-shirt or top and lubricated the heart rate sensor which was then applied and attached onto subject A's chest, just above the abdomen and below the pectoral muscles. The Polar Beat mobile phone app was installed and connected to the heart rate sensor which was used to monitor the subject's heart rate. The bike was then adjusted to be suited for the subject by moving the seat to the correct height so that the subject was comfortable. Before any exercise commenced a heart rate reading was taken whilst 1kg of weight was added to the resistance of the bike. Subject A then cycled at 50 RPM for four minutes and a heart rate reading was taken at minute two and four along with a BORG reading which tells us how hard the subject feels the exercise is using a scale system. Resistance weight was increased to 2kg at minute two and increased to 3kg at minute three.

3.5 Muscular Strength and Endurance

Exercises were conducted in order to determine muscular strength and endurance of the subject, subjects were paired in order to aid each other with the exercises. The first exercise was the YMCA 1-minute timed sit-up test. The sit-ups were done with the subject having their feet flat on the ground, knees bent and hands touching the side of their head. Subject B held subject A's feet in order to keep their feet planted firmly on the ground. Subject A then went from their back on the floor up to the elbow touching the opposite knee and back down again, this counted as 1 repetition. This was done for one minute with good form as quickly as possible with the quantity of repetitions achieved recorded.

30-second sit-to-stand chair test was conducted next. The chair was placed up against a wall, the subject then sat with their back straight, going from the seated position into the standing position and back down again. This was repeated for 30 seconds and the repetitions were recorded.

Seated arm curls were conducted with the subject sat on a chair, a straight back and their feet on the floor. The beginning of the curl started with the arm in the straight arm position, using a 2kg dumbbell it was curled upwards, towards the face. This was done over 30 seconds and the quantity of repetitions were recorded.

The sit-and-reach test was conducted next with the subject sitting on the floor with their feet against the sit-and-reach box, legs flat on the floor. The subject reached forwards across the box and pushed a bar forwards, the value was recorded at the subject's fingertips. This was repeated three times and the highest value was taken.

YMCA bench press test was conducted next with the weight set at 36.4kg and a metronome set at 60 beats per minute. The subject performed 60 repetitions in one minute and then continued to exhaustion.

Push-up test was conducted with correct form, toes touching the ground and repetitions were repeated until exhaustion.

One repetition max leg press was conducted with the machine set to the highest weight the subject could achieve. The subject sat with their back up against the seat and legs bent to a 90-degree angle, they then pushed until their legs were almost locked. A measurement was taken at the completed highest weight repetition.

One repetition max chest press was conducted with the machine set to the highest weight the subject could achieve. The subject sat with their back up against the seat and feet flat on the floor. The chest press bar was pushed from the chest to the top of the head. A measurement was taken at the complete highest weight repetition.

4 Results

Variables	Data	Normative value or Criterion	Classification
Sex	Male	-	-
Age	23 years	-	-
Height, cm	170	-	-
Weight, kg	74	-	-
BMI	25.6	19-24	Just above the normative value, overweight
Cardiorespiratory Fitness			
Blood pressure (systolic/diastolic), mmHg	130.5/76.5	120/80	Pre-high blood pressure
Resting heart rate, bpm	55	70	Athlete category
Estimated VO ₂ max, ml/kg/min	NO DATA	-	-
Body composition			
Waist circumference, inches	34	<40	Ideal

Hip circumference, inches	38.6	<38.9	Just within the normative value
Biceps skinfold, mm	8.6	-	-
Tricep skinfold, mm	12.9	-	-
Subscapular skinfold, mm	16.7	-	-
Suprailiac skinfold, mm	27.8	-	-
Total skinfold, mm	66	60-80	Excellent
Relative body fat, %	22.1	8-19	Slightly overweight, poor
Fat mass, %	24.7	10-22	Slightly too high
Fat-free mass, %	57.6	78-90	Too low, poor
Muscular strength and endurance			
1-minute timed sit-up test, repetitions	31	-	-
30-second sit-to-stand test, repetitions	19	-	-
Seated arm curls, repetitions	23	-	-
Sit-and-reach test, cm	28.5	-	-
YMCA bench press test, repetitions	85	-	-
Push-up test, repetitions	22	-	-
ORM leg press, kg	60	-	-
ORM chest press, kg	50	-	-

5 Summary

The BMI of subject A was slightly higher than it should be indicating that the subject is overweight. This was reinforced by the relative body fat, fat mass and fat-free mass percentages being worse than the normative values listed.

The systolic blood pressure was also slightly higher than the normative value however, the diastolic blood pressure was slightly lower than the normative value which made the classification of pre-high blood pressure.

The resting heart rate was listed in the athlete category as it was considerably lower than the average level according to the normative values.

The waist and hip circumferences were both ideal and within the normative values.

The estimated VO₂ max value was not recorded as there was an error in the data and time restraints meant that no retest was able to be conducted.

The individual skinfold measurements did not have normative values as the values are added together when they are summarised.

The muscular strength values do not have normative values as values could not be found for a male aged 23.

All of the information was considered and the overall fitness of subject A was determined as 'average'. The majority of the data collected was very close to the normative values with a few being lower than the normative value and a few being higher.

(2162 words)

6 References

Ganley, K. J., Paterno, M. V., Miles, C., Stout, J., Brawner, L., Girolami, G., Warren, M. (2011) 'Health-Related Fitness in Children and Adolescents', *Pediatric Physical Therapy*. 23 (3), pp208-220.

Høj, K., Skriver, M. V., Maindal, H. T., Christensen, B., Sandbæk, A. (2017) 'High prevalence of poor fitness among Danish adults, especially among those with high cardiovascular mortality risk', *European Journal of Public Health*. 27 (3), pp569-574.

LoveToKnow Corp (2018) *Health-related fitness*. Available at:
<https://www.yourdictionary.com/health-related-fitness> (Accessed 20 December 2019).

NHS (2018) *Cardiovascular disease*. Available at:
<https://www.nhs.uk/conditions/cardiovascular-disease/> (Accessed 20 December 2019).

Physical Activity Program for Subject A

1 Health-related fitness profile

Variables	Data	Normative value or Criterion	Classification
Sex	Male	-	-
Age	23 years	-	-
Height, cm	170	-	-
Weight, kg	74	-	-
BMI	25.6	19-24	Just above the normative value
Cardiorespiratory Fitness			
Blood pressure (systolic/diastolic), mmHg	130.5/76.5	120/80	Pre-high blood pressure
Resting heart rate, bpm	55	70	Athlete category
Estimated VO ₂ max, ml/kg/min	NO DATA	-	-
Body composition			
Waist circumference, inches	34	<40	Ideal
Hip circumference, inches	38.6	<38.9	Just within the normative value
Biceps skinfold, mm	8.6	-	-
Tricep skinfold, mm	12.9	-	-
Subscapular skinfold, mm	16.7	-	-
Suprailiac skinfold, mm	27.8	-	-
Total skinfold, mm	66	60-80	Excellent
Relative body fat, %	22.1	8-19	Slightly overweight, poor

Fat mass, %	24.7	10-22	Slightly too high
Fat-free mass, %	57.6	78-90	Too low, poor
Muscular strength and endurance			
1-minute timed sit-up test, repetitions	31	-	-
30-second sit-to-stand test, repetitions	19	-	-
Seated arm curls, repetitions	23	-	-
Sit-and-reach test, cm	28.5	-	-
YMCA bench press test, repetitions	85	-	-
Push-up test, repetitions	22	-	-
ORM leg press, kg	60	-	-
ORM chest press, kg	50	-	-

Subject A had good flexibility but was lacking in performance when tested on strength exercises as well as classing as slightly overweight.

Subject A would benefit from weight loss along with some full body strength training as these are the areas that are the weakest. No flexibility training is needed as the flexibility test result was above average.

2 Goals of the physical activity programme and responses to exercise

The desired outcome of this activity programme is to improve the subject's cardiovascular ability, strength and for them to lose weight.

The addition of focusing on weight loss is not only important to improve the subject's health but will also reduce the forces acting upon the knee when walking or running making the subject less prone to any knee related injury (DeVita et al 2016). Due to the weight loss, subject A will also have an increase in their stride length therefore making running easier (DeVita et al 2016).

3 Physical activity programme

The activity plan will span across a 16-week period by which point the subject will have improved their cardiovascular ability, strength, health and will be able to complete a half marathon.

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	Strength Training 1	Run 1	Rest	Strength Training 2	Rest	Run 2	Rest
2	Strength Training 3	Run 3	Rest	Strength Training 4	Rest	Run 4	Rest
3	Strength Training 5	Run 5	Rest	Strength Training 6	Rest	Run 6	Rest
4	Strength Training 7	Run 7	Rest	Strength Training 8	Rest	Run 8	Rest
5	Strength Training 9	Run 9	Rest	Strength Training 10	Rest	Run 10	Rest
6	Strength Training 11	Run 11	Rest	Strength Training 12	Rest	Run 12	Rest
7	Strength Training 13	Run 13	Rest	Strength Training 14	Rest	Run 14	Rest
8	Strength Training 15	Run 115	Rest	Strength Training 16	Rest	Run 16	Rest
9	Strength Training 17	Run 17	Rest	Strength Training 18	Rest	Run 18	Rest
10	Strength Training 19	Run 19	Rest	Strength Training 20	Rest	Run 20	Rest

11	Strength Training 21	Run 21	Rest	Strength Training 22	Rest	Run 12	Rest
12	Strength Training 23	Run 23	Rest	Strength Training 24	Rest	Run 24	Rest
13	Strength Training 25	Run 25	Rest	Strength Training 26	Rest	Run 26	Rest
14	Strength Training 27	Run 27	Rest	Strength Training 28	Rest	Run 28	Rest
15	Strength Training 29	Run 29	Rest	Strength Training 30	Rest	Run 30	Rest
16	Strength Training 31	Run 31	Rest	Strength Training 32	Rest	Run 32	Rest

The table was designed by inspiration and knowledge taken from various marathon running plans and strength fitness plans. The plans that were used were; Luff 2019, McGuire 2019, Virgin Money London Marathon 2019, DuVall 2012 and Men's Fitness 2018.

The current performance of subject A was conducted prior to this programme which was taken into consideration and therefore the exercises will not be at a beginner level but instead tailored to the subject.

Strength Training

Monday – Chest and back.

Bench press, 20kg + bar, 5 sets of 10 repetitions, 1-minute rest in-between. Following each successful workout, 2.5kg should be added to the bar. If a set is failed, subject A should go back to the weight from a week prior. To safely perform this exercise subject A should have someone standing near them who can remove the bar from them if there is a failed rep (a spotter).

Shoulder press (dumbbells), 8kg dumbbells, 5 sets of 10 repetitions, 1-minute rest in-between. Following each successful workout, the repetitions should be increased to 12 for the second week and then decreased back to 10 with the weight increased to the next dumbbell size for the third week. These steps are repeated throughout the programme unless subject A fails a set, then subject A should go back to the weight or repetitions from a week prior. To safely perform this exercise subject A should control the dumbbells and not let them fall as well as doing the repetitions slowly and with correct form.

Dumbbell row, 16kg dumbbells, 5 sets of 10 repetitions, 1-minute rest in-between. Following each successful workout, the repetitions should be increased to 12 for the second week and then decreased back to 10 and the weight increased to the next dumbbell size for the third week. These steps are repeated throughout the programme unless subject A fails a set, then subject A should go back to the weight or repetitions from a week prior. To safely perform this exercise subject A should perform by hinging at the waist without bending their back so that they do not suffer an injury.

Pulley Pulldown, 18kg, 5 sets of 10 repetitions, 1-minute 30 seconds rest in-between. Following each successful workout, 2.5kg should be added using the pins. If a set is failed, subject A should go back to the weight from a week prior. To safely perform this exercise subject A should make sure that their upper back is not arching inwards and that they hold correct form and posture throughout the repetitions.

Straight arm cable pulldown, 14kg, 5 sets of 10 repetitions, 1-minute rest in-between. Following each successful workout, 2.5kg should be added using the pins. If a set is failed, subject A should go back to the weight from a week prior. To safely perform this exercise subject A should pull the cable down and then release it back upwards slowly and controlled so that there are no sharp, fast movements that could cause injury.

Thursday – Shoulders, arms and legs.

Barbell squat, 60kg + bar, 5 sets of 5 repetitions, 1-minute 30 seconds rest in-between. Following each successful workout, 2.5kg should be added to the bar. If a set is failed, subject A should go back to the weight from a week prior. To safely perform this exercise subject A should have a foam wrap around the bar that sits across the shoulders and make sure that the bar is securely in the centre before a repetition is attempted.

Seated leg extension, 20kg, 5 sets of 10 repetitions, 1-minute rest in-between. Following each successful workout, the repetitions should be increased to 12 for the second week and then decreased back to 10 with the weight increased to the next dumbbell size for the third week. These steps are repeated throughout the programme unless subject A fails a set, then subject A should go back to the weight or repetitions from a week prior. To safely perform this exercise subject A should make sure that their back is flat against the chair and that they are in a comfortable position before a repetition is attempted.

Unassisted tricep dips, 5 sets of 5 repetitions, 1-minute 30 seconds rest in-between. Following each successful workout, the repetitions should be increased by 1 repetition each week. If a set is failed, subject A should go back to the number of repetitions from a week prior. To safely perform this exercise subject A should make sure that their head to their knees are straight at all times and that they are not swinging on the bar whilst attempting repetitions.

Lateral raise, 8kg dumbbells, 5 sets of 8 repetitions, 1-minute rest in-between. Following each successful workout, the repetitions should be increased to 10 for the second week and then decreased back to 8 with the weight increased to the next dumbbell size for the third week. These steps are repeated throughout the programme unless subject A fails a set, then subject A should go back to the weight or repetitions from a week prior. To safely perform

this exercise subject A should make sure that their arms are straight down at their sides and then slowly raised up and down without letting the back arch inwards.

Pulley Row, 20kg, 5 sets of 5 repetitions, 1-minute rest in between. Following each successful workout, 2.5kg should be added using the pins. If a set is failed, subject A should go back to the weight from a week prior. To safely perform this exercise subject A should make sure that their legs are slightly bent and that their back is straight when attempting repetitions.

Run

Subject A should run for 5km for week 1 and aim to complete this within 40 minutes. 0.5km should be added onto the run each running session for a total increase of 1km a week. By the end of the training programme, subject A should be running the distance of a half marathon.

In order to run with a low risk of injury the subject should slow down and even rest when experiencing a stitch or any form of discomfort. If an injury is sustained throughout a run, the subject should rest and apply ice to the affected area. The ice should be applied for 10 minutes, left off for 10 minutes and repeated for 50 minutes in order to reduce swelling. If the swelling and discomfort is noticeable for more than 48 hours then the training programme should be temporarily stopped and medical advice should be sought after.

(1707 words)

(3869 words total)

Footnote: Hi Simon, I just wanted to let you know I completed this before the guidelines were given out. I researched what I thought was right and had a go, but I was worried about being able to re-write it in time and revise for my exams.

4 References

DeVita, P., Rider, P., Hortobágyi, T. (2016) 'Reductions in knee joint forces with weight loss are attenuated by gait adaptations in class III obesity', *Gait & Posture*. 45 (1), pp25-30.

DuVall, J. (2012) *How to Make a Strength Training Plan (and Keep it!)*. Available at: <https://greatist.com/fitness/how-make-strength-training-plan-and-keep-it> (Accessed 4 January 2019).

Luff, C. (2019) *Beginner Marathon Training Schedule Train for Your First Marathon*. Available at: <https://www.verywellfit.com/beginner-marathon-training-schedule-2911396> (Accessed 4 January 2019).

McGuire, J. (2019) *RW Training Plans Beginner Half-Marathon Training Plan*. Available at: <https://www.runnersworld.com/uk/training/half-marathon/a25887045/beginner-half-marathon-training-schedule/> (Accessed 4 January 2019).

Men's Fitness. (2018) *Plan to Build Muscle*. Available at: <https://www.coachmag.co.uk/workouts/7596/your-four-week-workout-plan-to-build-muscle> (Accessed 4 January 2019).

Virgin Money London Marathon. (2019) *Training Beginner 17 Week Training Plan*. Available at: <https://www.virginmoneylondonmarathon.com/en-gb/trainingplans/beginner-17-week-training-plan/> (Accessed 4 January 2019).