Testing protocol

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www.olympics4all.eu
investimento.adl@cm-vncerveira.pt
(+351) 251708020
Praça do Município, 4920-284 Vila Nova de Cerveira

A. Introduction

The selected tests are based on previous studies. The present protocol is using tests which are validated and published on the different languages and countries involved in the study.

B. Sample & participants

Minimum of 75 participants must be involved on the project. Three groups must be defined: control group (CG) who just maintain the daily routines, exercising or not, but not participating on the games; experimental group 1 (EG1) who training by themselves, to be involved on the proposed training program and participating on the games; experimental group 2 (EG2) who are no exercising previously but they are involved, now, on the proposed training program and participating on the games.

C. Assessment

It was defined six moments of assessment (table 1).

	Moment A	Moment B
2018	March	September
2019	March	September
2020	March	September

In the moments under column A, the assessment includes all testing protocol

In the moments under column B, the assessment includes the physical fitness tests.

CG will be tested under moment A.

D. Anthropometric, biological and cognitive assessment

D.1. Anthropometric measures

Height is measured with stadiometer (seca 213, portable) or flexible tape. The stretch stature method requires the subject to use light cloths and barefoot, to

stand with the feet together and the heels, buttocks and upper part of the back touching the scale. The head when placed in the Frankfort plane need not be touching the scale. The subject is instructed to take and hold a deep breath and while keeping the head in the Frankfort plane the measurer applies gentle upward lift through the mastoid processes. The recorder places the head board firmly down on the vertex, crushing the hair as much as possible.

Weight or body mass is measured on a scale (Tanita BC-545N) with participant using light cloths and barefoot. Data on weight (kg), BMI (kg/m^2), total fat (%), basal metabolic rate (kcal), total muscle mass (kg), total bone mass (kg), total body water (kg) is collected and recorded on the database. For the most accurate results, the following guidelines should be followed on the bioimpedance test:

1. Do not eat for 2 hours prior to testing;
2. Do not exercise for 12 hours prior to testing;
3. Do not consume alcohol for 24 hours prior to testing;
4. Do not drink caffeine the day of your test;
5. Do not use metals;
6. People with pacemakers should not use Bioelectrical Impedance for body composition analysis.

Waist circumference (in centimeters (cm)) - This girth is taken at the level of the narrowest point between the lower costal (10th rib) border and the iliac crest. This measure is taken by using a flexible tape.

Hip circumference (in centimeters (cm)) - The girth is taken at the level of the greatest posterior protuberance of the buttocks which usually corresponds anteriorly to about the level of the symphysis pubis. This measure is taken by using a flexible tape.

Waist to hip ratio results from dividing waist/hip (cm). Database make the calculation automatically.

D.2. Blood pressure

The assessment of blood pressure (BP) using an automatic blood pressure monitor must be in a comfortable place to sit with good back support at a table

or desk. Before to take blood pressure, participant must be sit quietly for three to five minutes beforehand.

Ideally conditions of blood pressure assessment:

Participants were instructed to take their medication and not to take alcohol, tea or coffee, smoke or perform exercise in the 30min preceding the measurement. Two measurements of BP, separated by at least 5 min, were taken with blood pressure monitor, after a 10-min rest, with no tight clothes on the arm at the heart level. Register both results in the database and the mean value of the two measurements was considered (mmhg), for both systolic and diastolic blood pressure.

D.3. Mini-Mental State Examination, EQ-5D-5L & Participation Motivation Questionnaire (PMQ)

These tests are assessed under interview. Expert interviewer provide appropriated space, clam and without noise or other people interference, to perform the interview. Three different questionnaire, Mini-Mental State Examination, EQ-5D-5L and Participation Motivation Questionnaire, are performed in random order to avoid mental fatigue effects.

D.3.1. Mini-Mental State Examination

The Mini-Mental State Examination (MMSE) is currently one of the most widely used tools for the assessment and screening of cognitive impairment despite a number of issues raised regarding the sensitivity of some subtests and the negative impact of advanced age and poor education.

The MMSE consists of two parts, one covering orientation, memory and attention, with a maximum score of 21 points, and another that specific skills such as naming and understanding, with maximum punctuation of 9 points, totaling a score of 30 points (FOSTEIN et al. 1975).

To perform the test, you simple say “I am going to ask you some questions and give you some problems to solve. Please try to answer as best as you can”. Then, you ask each question a maximum of three times. If the subject does not respond, score 0. If the person answers: What did you say?, do not explain or engage in conversation. Merely repeat the same directions a maximum of three times.

D.3.2. EQ-5D-5L

The EQ-5D-5L consists of 2 pages – The EQ-5D-5L descriptive system and the EQ Visual Analogue scale (EQ VAS). The descriptive system comprises the same 5 dimensions as the EQ-5D-3L (mobility, self-care, usual activities, pain/discomfort, anxiety/depression). However, each dimension has 5 levels: no problems, slight problems, moderate problems, severe problems, and extreme problems. The respondent is asked to indicate his/her health state by ticking (or placing a cross) in the box against the most appropriate statement in each of the 5 dimensions.

The EQ VAS records the respondent's self-rated health on a 20 cm vertical, visual analogue scale with endpoints labelled 'the best health you can imagine' and 'the worst health you can imagine'

The EQ-5D-5L asks respondents to simply 'mark an X on the scale to indicate how your health is TODAY' and then to 'write the number you marked on the scale in the box below'.

D.3.3. Participation Motivation Questionnaire (PMQ)

The PMQ (Gill et al., 1983) is a 30-item list of possible reasons people has to participate in sport. A five-point Likert scale is used. Respondents answered the stem "I participate in sport because ...", indicating their preferences from 1 ("not at all important") to 5 ("extremely important"). Results of the factor analysis of the PMQ revealed the factors of 1) achievement/status, 2) team atmosphere, 3) fitness, 4) energy release, 5) skill development, 6) friendship and 7) fun, as basic motives for involvement.

E. Physical Fitness

E.1. Chair Stand Test

The purpose of the Chair Stand is to measure the strength of your lower body.

Equipment: Chair without arms, Stopwatch.

Test Steps:

1. Place the chair against a wall where it will be stable.

2. Sit in the middle of the chair with your feet flat on the floor, shoulder width apart, back straight.

3. Cross your arms at the wrist and place them against your chest.

4. The test partner will tell you when to begin and will time you for 30 seconds, using the stopwatch. You will rise up to a full stand and sit again as many times as you can during the 30-second interval. Register the number of times of complete rise up and sit.

   a. Each time you stand during the test be sure you come to a full stand.

   b. When you sit, make sure you sit all the way down. Do not just touch your backside to the chair. You must fully sit between each stand.

   c. Do not push off your thighs, or off the seat of the chair with your hands to help you stand unless you have to.

   d. Keep your arms against your chest crossed and do not allow the arms to swing up as you rise. e. If you are on your way up to stand when time is called you will be given credit for that stand.

Per Protocol Instructions: If the participant used their hands at all to push off in order to stand do not count that rep as a “Per Protocol” stand. Only stands that are done without any assistance by pushing off the seat, off the thighs or with any other assistive devices such as a walker or cane are counted as “Per Protocol” stands. If the participant is unable to do any stands per the protocol, then you may let the individual do the test by pushing off their legs or the chair, or using their walker, but the test will then be scored as “Did Not Follow Protocol.” Only “Per Protocol” scores are recorded in the overall group outcomes reports. Both “Per Protocol” scores and “Did Not Follow Protocol” scores are saved in the individual’s IHP personal account and center account.

E.2. Chair Sit and Reach Test

The purpose of the Chair Sit and Reach test is to measure lower body flexibility, specifically your hamstring flexibility.

Equipment: Chair, Ruler Test Steps:

1. Place the chair against a wall so it will be stable.

2. Slide forward in your chair until you are able to straighten one of your legs. The ankle of your straight leg should be flexed at about a 90-degree angle.

Your other foot should be flat on the floor.

3. Place one of your hands directly on top of the other so that they are stacked with your fingers extended.

4. Exhale as you bend forward at the hip and try to reach your toes. If the extended leg begins to bend, move back in your chair until the leg is straight.

5. Hold the stretch for at least 2 seconds and do not bounce or jerk as you reach.

6. Take two practice reaches on each leg. Determine which side is more flexible. You will measure and record only your most flexible side on your scorecard.

7. Be sure you have a stable chair so that the chair will not tip forward as you reach for your toes.

8. After you have completed the practice reaches, your test partner will hold a ruler across the toe of your shoe. The center of the toe of your shoe is considered to be a measurement of “0”.

9. Reach forward toward your toes. Mark your score to the nearest centimeter.

10. If you reach past this “0” point at the middle of your toe, you receive a positive score of as many inches as you reach past it, measured to the nearest centimeter

11. If you cannot reach your toes, you receive a negative score of as many centimeters as you are short of the “0” point at the middle of the toe of your shoe, measured to the nearest centimeter.

12. Try the reach twice and record the better of the two measurements.

Per Protocol Instructions: This test should be scored as “Followed Protocol” for all trials taken as there really are no modifications for this test.

E.3. Back Scratch Test

The purpose of the Back Scratch Test is a measure of flexibility of your upper body.

Equipment: Ruler

Test Steps:

1. Place your left arm straight up in the air above your left shoulder.

2. Bend your left arm at the elbow to reach toward your back, with your fingers extended. Your elbow pointed toward the ceiling.

3. Place your right hand behind your back with your palm out and your fingers extended up.

4. Reach up as far as possible and attempt to touch the fingers of your two hands together. Some people are not able to touch at all, while others’ fingers may overlap.

5. Take two practice stretches with each arm, determining which side is more flexible. You will be measuring and recording only your most flexible side.

6. You are now ready to be measured. Perform the stretch as outlined above. Without shifting your hands, your test partner will position your fingers so that they are pointing toward each other.

7. The distance between the fingertips of one hand and the other is measured to the nearest centimeter. If your fingers overlap, the amount of the overlap will be measured.

8. Fingertips just touching receive a score of “0”.

9. If your fingers do not touch, you receive a negative score of the distance between your fingers, measured to the nearest .5 or centimeter.

10. You receive a positive score if your fingers overlap, measuring the overlap to the nearest .5 or centimeter.

11. If you are able to touch your fingers together, do not grab your fingers together and pull, as this will affect the accuracy of your score.

12. Do the stretch twice, recording the best score and remember to indicate if the score was positive or negative.

Per Protocol Instructions: This test should be scored as “Followed Protocol” for all trials taken as there really are no modifications for this test. If modifications are made in any way, record the score as “Did Not Follow Protocol” and note the modifications in the test comments section.

E.4. Handgrip Test

The purpose of the Handgrip test is to measure upper limb muscle strength

Test Steps

1. The participant should be seated in an armless chair

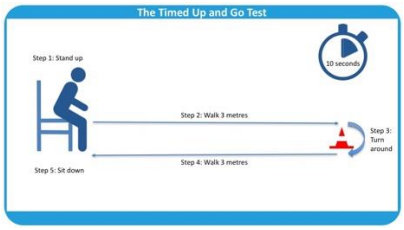
2. His elbow should be bent at a 90º angle

3. The tester must encourage the participant by saying “squeeze, squeeze, squeeze” while the participant is squeezing

4. Tell the participant to stop when you see the arrow starting to go down.

5. Repeat the examination three times, each hand, alternately

Per Protocol Instructions: Record the results of each trial before the next attempt. The best score will be recorded



E.5. Up and Go Test

The purpose of the Up and Go test is to measure your speed, agility and balance.

Equipment: Chair, Cone (or other marker) 3 meters away from chair, Stopwatch

Test Steps:

1. Sit in the chair with your hands on your thighs, your feet flat on the floor with one foot slightly ahead of the other.

2. Your test partner will hold the stopwatch and stand near the place where you will walk around the marker on the floor.

3. Your test partner will signal, “go” and start the watch. For test accuracy, your test partner must start the watch on the signal, “go.” Do not wait to start the watch after the participant has started to move.

4. The test is timed to the nearest tenth (.1) of a second, so it is important to be as accurate as possible when starting and stopping the watch.

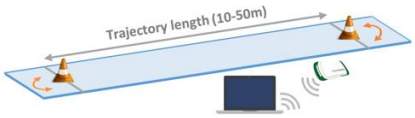
5. Upon the signal “go” rise from the chair and walk as quickly as possible out to the marker. You may press off your thighs of the chair when you rise. Do not run. Walk around the outside of the marker and return to your seat as quickly as possible, being sure to be safe in your movements.

6. As soon as you are fully seated again your test partner will stop the watch and record your time to the nearest tenth of a second.

7. If you would like to take a practice test before testing for a score you may. You may then take the test twice, recording your best score.

8. Remember to record the score to the nearest tenth, for example 4.9 seconds or 8.9 seconds.

Per Protocol Instructions: If the participant does not feel stable enough to do the test without an assistive device then allow the participant to use an assistive device such as a walker or a cane but their score will be recorded as “Did Not Follow Protocol.” It is important to try to have the participant record a “Followed Protocol” score if possible since a score of “0” cannot be recorded in this test. Do not worry how slowly a person completes the test “Per Protocol” what is important is to ensure the safety of the participant and try to obtain a “Per Protocol” score.



E.6. 6 minutes walking Test

The purpose of the 6 minutes walking test (6mwt) is a useful measure of functional capacity

Equipment: Countdown timer (or stopwatch), Mechanical lap counter, small cones to mark the turnaround points

Test Steps

1. The 6mwt should be performed indoors, along a long, flat, straight, enclosed corridor with a hard surface that is seldom traveled. If the weather is comfortable, the test may be per- formed outdoors. The walking course must be 30 m in length.

2. Patient should use comfortable clothing and appropriate shoes for walking

3. Patients should not have exercised vigorously within 2 hours of beginning the test.

4. Repeat testing should be performed about the same time of day to minimize intraday variability. A “warm-up” period before the test should not be performed.

5. Instruct the patient as follows:

"The object of this test is to walk as far as possible for 6 minutes. Six minutes is a long time to walk, so you will be exerting your- self. You will probably get out of breath or become exhausted. You are permitted to slow down, to stop, and to rest as necessary. You may lean against the wall while resting, but resume walking as soon as you are able.

You will be walking back and forth around the cones. You should pivot briskly around the cones and continue back the other way without hesitation. Now I'm going to show you. Please watch the way I turn without hesitation."

"Are you ready to do that? I am going to use this counter to keep track of the number of laps you complete. I will click it each time you turn around at this starting line. Remember that the object is to walk AS FAR AS POSSIBLE for 6 minutes, but don't run or jogging. Start now, or whenever you are ready."

Per Protocol Instructions: This test should be scored as maximal distance, in meters, walked by participant

F. References

ISAK. (2001). International Standards for Anthropometric Assessment: International Society for the Advancement of Kinanthropometry. School of Physical Education, Exercise and Sport Studies. The University of South Australia Underdale, SA, Australia