A Proposal of Physical Performance Tests Adapted as Home Workout Options during the COVID-19 Pandemic

Danúbia da Cunha de Sá-Caputo 1,2, Redha Taiar 3,*, Adérito Seixas 4, Borja Sanudo 5, Anelise Sonza 6 and Mario Bernardo-Filho 1

1 Departamento de Biofísica e Biometria, Laboratório de Vibrações Mecânicas e Práticas Integrativas, Policlinica Piquet Carneiro and Instituto de Biologia Roberto Alcantara Gomes, Universidade do Estado do Rio de Janeiro, Rio de Janeiro 20950-003, Brazil; dradanubia@gmail.com (D.d.C.d.S.-C.); bernardofilhom@gmail.com (M.B.-F.)
2 Faculdade Bezerra de Araújo, Rio de Janeiro 23052-180, Brazil
3 Université de Reims Champagne Ardenne, 51100 Reims, France
4 Departamento de Fisioterapia, Escola Superior de Saúde, Universidade Fernando Pessoa, 4200-253 Porto, Portugal; aderito@ufp.edu.pt
5 Departamento de Educación Física y Deporte, Universidad de Sevilla, 41013 Seville, Spain; bsancor@us.es
6 Departamento de Fisioterapia, Programa de Pós-Graduação (PPG) em Fisioterapia e PPG em Ciências do Movimento Humano, Centro de Ciências da Saúde e do Esporte, Universidade do Estado de Santa Catarina, Florianópolis 88080-350, SC, Brazil; anelise.sonza@udesc.br

* Correspondence: redha.taiar@univ-reims.fr

Received: 13 May 2020; Accepted: 7 July 2020; Published: 10 July 2020

Featured Application: Several countries adopted social isolation and home confinement as measures to slow down the infection rates of the new coronavirus disease. This measure may decrease the levels of physical activity and general health of the individuals. This manuscript proposes the use of known and simple physical tests adapted as home-based exercises to avoid sedentary behavior and decrease in quality of life of the population.

Abstract: Social isolation and physical distancing measures, such as quarantine, local confinement, lockdown and isolation, aim to slow the spread of the coronavirus disease (COVID-19). This condition is necessary; however, sedentary behaviors are stimulated. The aim of this manuscript is to propose simple home-based exercises that everyone, considering their individual limitations, could perform. Moreover, individuals might monitor their performance daily. Feasible and useful home-based exercise strategies, to counter-balance the negative impact of the sedentary lifestyle during confinement, will stimulate the population to perform some exercises wherever possible. For this, home-based exercises were proposed based on physical tests, such as a stair climb test, balance test, single-leg-stance-test, gait speed, five-chair stand, free walking, free run, six-minute walk test, timed up and go, sit-and-reach, fingertip-to-floor test, and free physical exercises. It is important to consider that when the individual is performing the test, physical exercise is also being done. In conclusion, several exercises that consider the clinical conditions of the individuals and can reduce their sedentary behavior, considering COVID-19 confinement, are suggested to improve the population’s quality of life.

Keywords: COVID-19; social distancing; physical exercise; home-based exercise; home; confinement
1. Introduction

To decrease the spread of the coronavirus disease (COVID-19) and to reduce the interaction between unrecognized infected and non-infected individuals, different strategies have been proposed, ranging from quarantine, local confinement, lockdown, and isolation. Although people may have sedentary behaviors and be physically active, it has been suggested that, while confined at home, individuals reduce their daily activities outside and, consequently, the level of physical activity is thought to decrease. This may have a negative impact in general health and contribute to sedentary behaviors [1].

COVID-19 is caused by a respiratory virus called SARS-COV2 and was first described in Wuhan, China in December 2019. This condition has characteristics (pathogen transmissibility and virulence) that favor the pandemic potential and its rapid global spread [2,3]. Individuals with COVID-19 can present mild to moderate respiratory illness and recover without requiring special treatment. Some people have more chances to develop serious illness, as older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer [3]. Actions have been proposed to try to avoid the COVID-19 infection, such as: (i) washing hands frequently; (ii) maintaining social distancing; (iii) avoiding touching the denoted facial T-zone (eyes, nose, mouth), as this is the access point for virus into the upper respiratory tract; and (iv) practicing respiratory hygiene [4,5]. Considering the World Health Organization (WHO) advice related to social distancing, to prevent the spread of the infection to a large number of people at the same time, which would cause a collapse in the health systems of the affected countries and the death of many people, the possibility to perform physical exercise (PEx) is reduced. PEx can be defined as a systematic sequence of movements executed with a predefined purpose. It impacts not only circulatory adaptations, but also neuronal integration with the potential to influence cognition [6]. In addition, the importance of PEx practice to prevent overall mortality [7,8], as well as cardiovascular disease-related mortality [9], or cancer-related mortality have been pointed out [9–11].

Some physical tests, if performed regularly, can be compared to physical exercises due to the biomechanical stimulus promoted. When tests are used to improve physical performance, there are advantages related to the same “exercise” that can be performed to improve the physical performance of the individual and, itself, can be used to measure its effects on the individual. It is important to consider that when the individual is performing the test, an exercise is also being done. Exercise can be defined as any bodily activity that enhances or maintains physical fitness and overall health, wellness, and productivity [12]. This would increase the performance of the individual in that particular PEx and the same test can be used to assess the improvements in physical fitness.

In this context, attempting to avoid the growing and undesirable consequences due to sedentary behavior in the period of the COVID-19 pandemic, it is important to stimulate the practice of PEx at home. The aim of this manuscript is to present a proposal of simple home-based exercises that everyone could perform. Moreover, as it is possible to measure outcomes, such as time and/or distances, the individuals might register their performance daily.

2. General Considerations

This manuscript will suggest feasible and useful strategies to counter-balance the negative impact of sedentary behavior during the COVID-19 pandemic that can be done at home and, in the future, to stimulate the population to exercise wherever or whenever possible.

The selected modalities of PEx activities are deeply related to physical tests used to assess the physical performance of individuals. They are safe, simple, valid, scientifically supported by evidence in publications found in PubMed, PEDro, and Scopus databases, and can be performed at home.

The physical tests, stair climb test (SCT), balance test, single-leg-stance-test (SLST), gait speed, five-chair stand (5CS), free walking, free run, six-minute walk test (6MWT), timed up and go (TUG), sit-and-reach (SR), fingertip-to-floor test, and free physical exercises, are presented as PEx, with their aim, description, feasibility, and clinical practice for the home-based exercises. The exercises should be
chosen based on the preferences and fitness of the individuals, and several exercises were proposed, providing several options to the individuals.

In general, to practice the exercises at home, the individual will need a timer or a watch to time the activity, or an application, such as Nike Run Club® or similar. Furthermore, it is important to point out the relevance of a safe place (with other persons nearby, or with objects to support the individual, if necessary). Individuals with motor and/or cognitive limitations, and that do not feel confident in being able to perform the exercise must have the help of family or caregivers to perform the exercises, even if they are practical and simple to perform. Another general recommendation is that exercises can be adapted in terms of difficulty, for instance, exercises on stairs can be started on stairs with handrails to provide support if needed and when the individual is confident the support can be avoided, and in exercises with chairs the individuals may use chairs with armrests to provide support if needed and when the individual is confident the support can be avoided. In plank exercises the individuals may start with the knees on the floor, progressing to the normal plank posture. These are some examples, but the main idea is that individuals must feel comfortable while doing the exercise.

An additional and important recommendation is that, although PEx is very relevant, the individual must drink sufficient water or juice and have good nutrition. In addition, the time spent to perform the exercises per day must consider the individual characteristics, and a time about 30 min would be desirable [13].

3. Self-Progress Registration

A simple system can be used to record the variables of interest for the selected exercises (Figure 1). The date of the activity, the type and the time (min or s) and/or the distance during the activity would be collected daily. Moreover, the individual can report some undesirable condition, such as fatigue, dyspnea, pain, and vertigo. Figure 2 shows a spreadsheet suggestion for the individual to register the aims, feasibility, and practical application to guide the home-based exercises adapted from the physical tests.

| Date of the activity | Type of the activity | Time (min or s) | Distance (cm or m) | Undesirable condition | More... |
|----------------------|----------------------|-----------------|--------------------|-----------------------|--------|
|                      |                      |                 |                    |                       |        |
|                      |                      |                 |                    |                       |        |
|                      |                      |                 |                    |                       |        |
|                      |                      |                 |                    |                       |        |

**Figure 1.** Spreadsheet suggestion to allow the individual to register the daily “self-progress” of the home-based exercises adapted from the physical tests.
4. Physical Tests Adapted as Home-Based Exercises

4.1. Stair Climb Test (SCT)

4.1.1. Aim and Description

The aim of the SCT is to assess the ability of an individual to ascend and descend some steps of a stair. This will provide important information related to lower extremity strength, power, and balance. There are some variations of the SCT, considering several aspects, such as (i) the clinical conditions of different populations, (ii) the number of steps of the stair, (iii) the task requirement (ascent only or ascent/decent combined), and (iv) whether the test is timed over a set number of steps or the step count is recorded for a set period of time [14]. The measurements used to the individual performs the exercise will be important to a control and to try to improve in subsequent attempts.

4.1.2. Feasibility

No formal instructions and place are required. If the individual lives in a flat, the stairs between two floors could be used to do the exercise. In addition, a timer or a watch could be used to time the activity, or an application, such as Nike Run Club®. If the individual lives in a house, buying a simple stair of wood or iron may be an option. The use of a handrail is not required for this test but may be considered for security reasons. The individual will be able to follow the progress day by day. Figure 3 shows the conditions for the individual to perform the SCT.

4.1.3. Practical Application

As a modality of PEx, it is important to improve muscular strength of lower limbs, cardiovascular system, circulation, balance, flexibility, and to prevent the risk of falls.

In general, the SCT adapted for a home-based exercise works for lower limb and trunk muscles, balanced by the upper limbs. Climbing stairs represents mostly concentric contraction (e.g., gluteus maximus, quadriceps, and triceps surae); walking down the stairs, an eccentric contraction of the quadriceps muscles in the leg will be performed. The slower the movement (walking down the stairs), the more eccentric the contraction of the muscles.
4.2. Balance Test

4.2.1. Aim and Description

Balance is an ability of a body to maintain itself in the line of gravity (the vertical line from the center of mass) standing on the base of support with minimal postural sway. Sway is the movement of the body in relation to the center of gravity. Naturally, there is a certain amount of sway related to breathing, shifting body weight from one foot to the other, or from forefoot to rearfoot, or from external triggers, such as visual distortions and floor translations. An increase in sway is not necessarily an indicator of dysfunctional balance but it is an indicator of decreased sensorimotor control [15]. Maintaining balance requires coordination of input from multiple sensory systems including the vestibular, somatosensory, and visual systems [16]. In addition, in different positions, the muscles will work and exercise will be done.

The purpose of this exercise is to offer a suggestion that permits self-evaluation, such as measuring the time to perform each part of the test. In this case, all the tests were adapted.

4.2.2. Feasibility

The balance test can be performed with different positions of the feet: (i) side-by-side stand; (ii) semi-tandem stand, when the individual places one foot partially in front of another, touching the heel of the partially front foot with hallux from behind standing; (iii) tandem stand, when the individual stands with one foot in front of the other one, touching the toes (Figure 4). Time in each position, without losing balance, should be noted. It is considered a good time if each position is maintained for more than 10 s. Safety while performing this exercise is essential, with another person nearby or with objects to support the individual, if necessary.

4.2.3. Practical Application

As a modality of PEx, it is important to improve the balance, the muscular strength of lower limbs, and to prevent the risk of falls. The base of support reduction (feet together) requires a better balance in the sagittal plane; consequently, mainly the muscles from the anterior-posterior chains will be activated. Semi-tandem and tandem positions require a better balance in the frontal plane; consequently, mainly the muscles from the lateral chains will be activated. Crossed arms in front of the trunk require a greater balance effort.
4.3. Single-leg-Stance-Test (SLST)

4.3.1. Aim and Description

SLST, or single-legged stance, is a simple assessment tool used to evaluate balance and postural stability while transiently standing on a single limb [15].

Subjects are timed on their ability to stand on a single leg with their eyes open, wearing tennis shoes or not. Subjects are instructed to lift one foot just off the floor, focus on a point on a nearby wall in front of them, and stand for as long as they are able, up to a maximum of one min. The time that an individual can stand on one lower limb (Figure 5) should be noted. After that, the individual would do the same with the other foot.

Figure 5. The individual is in single-legged stance with the right (A) or with the left (B) leg as the arrows indicate.
4.3.2. Feasibility

No formal instructions and place to perform the PEx are required. A timer, or a watch, to quantify the time required to perform the exercise is necessary. The comparison of the time of each day will allow the individual to follow the progress. To perform this test, it is important to consider to be in a safe place (with other person near or with objects to support the individual, if it is necessary). A timer or a watch is important to the measurement of time. No formal instructions or special setup is required, just a timer or a watch to assess performance during the test. Daily analysis allows for monitoring performance changes.

4.3.3. Practical Application

As a modality of PEx, it is important to improve the balance, the muscular strength of lower limbs, and to prevent the risk of falls.

This adapted test being used as one of the home-based exercises works mainly in the frontal plane for balance improvement and ankle muscle strengthening, such as the posterior tibial muscle and fibular muscles. Additionally, in the sagittal plane, tibialis anterior, toe flexors, and triceps surae will be used. Crossed arms in front of the trunk require a greater balance effort.

4.4. Gait Speed

4.4.1. Aim and Description

Gait or walking speed is an important objective measure of functional mobility [17] and can also be considered a type of exercise. Gait speed can be quickly and easily measured, and it is described as a reliable and valid measurement for the walking performance of an individual. It is also regarded as a pivotal factor associated with quality of life. In the gait speed test, individuals are instructed to walk a defined distance (3 or 4 m) with normal and usual walking speed from a specific point and to come back (Figure 6). A chronometer is used to accurately measure the time. Gait speed is then calculated from distance and time values.

Figure 6. Schematic figure of a home corridor, or a space without furniture. The distance between A and B should be 3 or 4 m.

4.4.2. Feasibility

No formal instructions and settings are required. It is necessary to use a timer or a watch to determine the time required to perform the exercise. It is required to define the start (0 m) and finish points, 3 or 4 m apart, depending on the available space. The comparison of daily results will provide feedback regarding individual progression.
4.4.3. Practical Application

As a modality of PEx, it is important to improve the muscular strength of lower limbs, cardiovascular system, circulation, balance, flexibility, and to prevent the risk of falls.

4.5. Five-Chair Stand (5CS)

4.5.1. Aim and Description

The 5CS is used to assess lower extremity strength [18]. The individual is asked to fold their upper limbs across their chest and stand up from and sit down on a standard chair without the aid of the upper limbs. The individual is asked to stand up and sit down five times as fast as possible starting in the sitting position and stopping after the fifth repetition and the time to perform the test is determined (Figure 7). The 5CS test correlates well with other measures of physical performance and self-reports. Although, the test considers standing up and sitting down five times, the individual, thinking about the approach of this proposal, can perform any number of times that they choose. Moreover, the time to perform the test can be measured.

Figure 7. Steps of the five-chair stand and the minimal material required. The arrows indicate in (A) the materials required to the exercise, that are (a) the chair is against a wall, (b) a watch (or a timer), (c) the chair; (B) the movement to sit down; and (C) the movement to stand up.

4.5.2. Feasibility

No formal instructions and place to perform the PEx are required. A timer or a watch is necessary to determine the time to perform the exercise. Moreover, a chair (no plastic) is required, placed against the wall for safety reasons. The individual can compare the time to perform a determined number of “stand up and sit down” each day, or to verify this number in a determined time. This information will permit the individual to follow the progress day-by-day.

4.5.3. Practical Application

As a modality of PEx, it is important to improve the muscular strength of lower limbs, cardiovascular system, circulation, balance, flexibility, and to prevent the risk of falls.

The 5CS adapted for a home-based exercise will work concentrically and eccentrically on the pelvic girdle and trunk. When moving from a sitting to a standing position, the concentric activity of the triceps surae, quadriceps, gluteus maximus, and extensor spinal muscle activation happens associated with the eccentric hip and trunk flexor muscles. When moving from a standing to a sitting position, the concentric activity of the hip and trunk muscle activation occurs, associated with the eccentric hip and trunk extensors muscles.
4.6. Free Walking

4.6.1. Aim and Description

Walking, like cycling, dancing, running, and swimming, is considered an aerobic exercise, that is any physical activity that uses large muscle groups and causes the body to utilize more oxygen than while at rest [19]. The aim of aerobic exercise is to increase cardiovascular endurance. The individual can wear tennis shoes and define a distance to walk freely, without obstacles (Figure 6), considering the approach of this proposal. The goal is to exercise at least between 15 and 30 min.

4.6.2. Feasibility

No formal instructions and place to perform the PEx are defined. A timer or a watch is necessary to determine the time to perform the exercise. It would be also possible to consider the number of times to go from (A) to (B). It is required to define the place to start (0 m) and to come back (depending on the available space). The comparison of the time of each day will allow the individual to follow the progress. In addition, an application, such as Nike Run Club®, would permit one to register the time, the distance, and the gait in m or km per second.

4.6.3. Practical Application

As a modality of PEx, it is important to improve the muscular strength of lower limbs, cardiovascular system, circulation, balance, flexibility, and to prevent the risk of falls.

4.7. Free Running

4.7.1. Aim and Description

Running is also considered an aerobic exercise, contributing to increasing one’s cardiovascular endurance, and large muscles are involved. The path to complete the exercise should be defined, free from obstacles (Figure 8) [19]. The individual can wear tennis shoes and define a distance to run freely without obstacles, considering the approach of this proposal. The goal is to exercise at least between 15 and 30 min.

Figure 8. An example of a room, inside a house, that could be used to perform the free running. (A) represents the starting position for the exercise.
4.7.2. Feasibility

No formal instructions and place to perform the PEx are defined, however, it is advisable to seek the advice of a physiotherapist or a physician to be sure that it is safe to perform the exercise. A timer or a watch is necessary to determine the time required to perform the exercise. It is required to define the place to start (0 m) and to come back (depending on the available space). It would also be possible to consider the number of times to go and to return to (A). The comparison of the time required to perform the exercise each day will allow the individual to follow the progress. In addition, an application, such as Nike Run Club®, would permit registering the time, the distance, and the gait in m or km per second.

4.7.3. Practical Application

As a modality of PEx, it is important to improve the muscular strength of lower limbs, cardiovascular system, circulation, balance, flexibility, and to prevent the risk of falls.

4.8. Six-minute Walk Test (6MWT)

4.8.1. Aim and Description

The 6MWT assesses endurance and the ability to walk over longer distances, and it is also considered an aerobic exercise and large muscle groups are involved [19]. The path to complete the exercise should be defined, free from obstacles (Figure 6, with the distance between A and B as long as possible) and the length of the path should be assessed, which allows for calculating the distance that an individual is able to walk in six minutes. Resting is allowed during the exercise, but the time does not stop.

4.8.2. Feasibility

No formal instructions and place to perform the PEx are defined, however, it is advisable to seek the advice of a physiotherapist or a physician to be sure that it is safe to perform the exercise in the presence of chronic diseases. A timer, or a watch, to determine the time required to perform the walking exercise is necessary. It is required to define the place to start (A) and to come back (depending on the available space). The comparison of the time required each day will allow the individual to follow their progress. In addition, an application, such as Nike Run Club®, would permit one to register their time, the distance, and the gait in m or km per second.

4.8.3. Practical Application

As a modality of PEx, it is important to improve muscular strength of the lower limbs, cardiovascular system, circulation, balance, flexibility, and to prevent risk of falls.

4.9. Timed Up and Go (TUG)

4.9.1. Aim and Description

The TUG assesses basic mobility skill as well as strength, balance, and agility [16]. The measurement of the time (seconds) taken to rise from sitting in a chair, walk three meters, turn, walk back to the chair and sit down is required (Figure 9). A walking aid may be used, if necessary.

4.9.2. Feasibility

No formal place to perform the exercise is defined. It is required to identify the place to start (where the chair is) and to come back (3 m from the chair). A timer or a watch is necessary to confirm the time to perform the exercise, and, also a chair. The daily comparison of the time required to perform all the steps of the exercise will allow the individual to follow their progress.
4.9.3. Practical Application

As a modality of PEx, it is important to improve muscular strength of the lower limbs, cardiovascular system, circulation, balance, flexibility, and to prevent the risk of falls.

![Figure 9](image-url)  
**Figure 9.** The individual is sited in a chair (A), stand up (B), walk three meters (C), turn (D), walk back to the chair (E), then, sit down again (F). The time is measured during the test.

### 4.10. Sit-and-Reach (SR)

#### 4.10.1. Aim and Description

The test (SR) is a common assessment method for flexibility [20]. The individual sits on the floor, keeping the knees and legs extended, and the back in contact with a fixed wall. The individual has to reach forward slowly, as far as possible, with hands overlapped and to hold the end position, and a mark with a pen is made on the leg. The farthest point reached with the fingertips is the obtained SR distance and it can be considered as zero (Figure 10). Jerky movements must be avoided. The person must tilt the hip forward feeling the stretching increase in the hamstring muscles and ensure that the hands remain at the same level, reaching further forward together. In the repetitions of the next days, the individual can assess their progression.

![Figure 10](image-url)  
**Figure 10.** Steps of the sit-and-reach exercise. The individual (A) is sitting on the floor with the back in contact with the wall, (B) the arm stretched, and (C) reaches forward slowly, as far as possible, with their hands overlapped and to hold the end position and a mark with a pen is done in the leg.
4.10.2. Feasibility

No formal place to perform the exercise is defined. It is required to use a pen to mark the distance that the fingertips can reach. A small ruler can be used to evaluate the progress of the individual (Figure 11).

4.10.3. Practical Application

As a modality of PEx, it is important to improve flexibility, since the exercises stretch the posterior muscle chain and, with the forward advancement, the abdominal and iliopsoas muscles are activated.

4.11. Fingertip-to-Floor Test

4.11.1. Aim and Description

The fingertip-to-floor test (FTF) can be also considered an exercise that involves musculoskeletal work for one’s flexibility [21]. The individual stands on the floor, barefoot or with tennis shoes, and keeping the feet hip distance apart to help with the balance. The individual has to bend forward as far as possible, while maintaining the knees, arms, and fingers fully extended, and also an adequate posture of the back. It is important to remind that rounding of the back must be avoided to protect the spine; for that, the person must tilt the hip forward (Figure 11C) feeling the stretching increase in the hamstring muscles and ensure that the hands remain at the same level (Figure 11B). The vertical distance between the tip of the middle finger and the floor is measured with a measuring tape (Figure 11).

![Image of the fingertip-to-floor test](image)

**Figure 11.** (A) The individual stands erect on the floor barefoot or with tennis shoes and, keeping the feet hip distance apart, bends forward as far as possible, while maintaining the knees, arms, fingers, and legs fully extended; (B) front view, with hands at the same level; and (C) lateral view, attention must be done to tilt the hip forward, feeling the stretching increase in the hamstring muscles, to avoid rounding the back. The vertical distance between the tip of the middle finger and the floor is measured with a measuring tape.

4.11.2. Feasibility

No formal place to perform the exercise is defined. It is required to use a ruler or measuring tape to measure the distance of the fingertip of the individual to the floor. This will permit using this measurement to evaluate the daily progress of the individual.
4.11.3. Practical Application
As a modality of PEx, it is important to improve flexibility.

4.12. Free Physical Exercises

4.12.1. Aim and Description
It is a matter of practicing free PEx with an intensity ranging from low, moderate, to sustained depending on each person’s level and previous exercise practice [22,23]. It must be practiced for a minimum duration, which may be divided up during the day, but must not be less than 10 min. The simplest measure of the intensity of physical effort is the heart rate calculated as follows: 220−age of the person. At 60–65% of this value, we speak of moderate activity, and from 75% of high intensity. However, this formula is only valid if the person is not medicated with drugs acting on the heart rate (beta-blockers). Unlike competitive or high-level sports practice, which aggravates stress and anxiety, moderate physical activity, such as the exercises proposed (Figure 12), strengthens self-esteem, eventually restores confidence, and allows a better quality of life. The promotion of PEx in the confinement period can only be optimized, and healthy nutrition is recommended.

4.12.2. Feasibility
It is recommended to practice these exercises at least three hours per week (if possible, several times) at a moderate pace or three times 20 min per week at a more vigorous pace. It is a matter of carrying out educational activities of a recreational, re-educative, and informative nature at home. This allows physical maintenance and an increase of the family bond since this can be a family activity. The main aim is to minimize the stress related to confinement and not an improvement in exercise performance. The exercises proposed in Figure 12 can be performed in the form of a training circuit. The aim is to do each exercise for 30 s. At the end of all the proposed exercises, a five-minute break is required before repeating the same series. Depending on the level of tiredness and the feeling of fatigue, a third series can be performed. Beginners must start the plank exercises with positions D and F and, after feeling confident, the progression must be done with exercises E and G; attention to the trunk and hip position is required and, before progressing in the exercise, the individual must be sure that they can keep the body in the correct position. It is relevant to remind that the intensity can be controlled through the heart rate. The proposed exercises are relatively simple and have no impact on the musculoskeletal system in terms of the stress suffered.

4.12.3. Practical Application
As a modality of PEx, it is important to improve the general performance and several groups of muscles are involved.
It is recommended to practice these exercises at least three hours per week (if possible, several times) at a moderate pace or three times 20 minutes per week at a more vigorous pace. It is a matter of carrying out educational activities of a recreational, re-educative, and informative nature at home. This allows physical maintenance and an increase of the family bond since this can be a family activity. The main aim is to minimize the stress related to confinement and not an improvement in exercise performance. The exercises proposed in Figure 12 can be performed in the form of a training circuit. The aim is to do each exercise for 30 seconds. At the end of all the proposed exercises, a five-minute break is required before repeating the same series. Depending on the level of tiredness and the feeling of fatigue, a third series can be performed. Beginners must start the plank exercises with positions D and F and, after feeling confident, the progression must be done with exercises E and G; attention to the trunk and hip position is required and, before progressing in the exercise, the individual must be sure that they can keep the body in the correct position. It is relevant to remind that the intensity can be controlled through the heart rate. The proposed exercises are relatively simple and have no impact on the musculoskeletal system in terms of the stress suffered.

4.12.3. Practical Application

As a modality of PEx, it is important to improve the general performance and several groups of muscles are involved.

Figure 12. Circuit training for PEx practice during the COVID-19 period. It concerns simple free exercises with no impact on the musculoskeletal system in terms of the suffered stress. The muscles’ contributions are described for each picture. (A) Postural control and balance training; "stretch" flexors of the hip: rectus femoris and psoas muscles; (B) postural control, spinal erectors (m. Spinals) in statics, m. quadriceps strengthening; (C) postural control, strengthening of the m. quadriceps and shoulder flexors: long head of biceps brachii, deltoid, coracobrachial muscles; (D), (E) plank for overall anterior chain reinforcement of the abdominals; (D) starting exercise with knees on the floor; (E) progression; attention must be paid to keep the back and hip straight; perform the exercises on the right and left sides; (F), (G) lateral plank, for overall lateral chain reinforcement of the abdominals; (F) starting position 1 and, after feeling confident, move to position 2; (G) progression, attention must be paid to keep the trunk and hip straight; perform the exercises on the right and left sides; (H) bridge exercise, a closed chain weight-bearing exercise which increases muscular strength of the hip extensors and promotes trunk stability; (I) postural control, stabilization of m. serratus anterior, shoulder girdle, stabilization of the left pelvic girdle, and reinforcement of the hip extensor on the right: gluteus maximus and hamstring muscles; alternate right and left legs.
5. Discussion

According to the World Health Organization nearly a third of the individuals older than 15 years of age are physically inactive, and more than 3 million deaths each year can be attributed to this factor. The limitations in circulation and participation imposed by the world governments are very important but are, most likely, responsible for reducing even further the physical activity levels [1]. PEx has many virtues and is an important basis for making our daily life easier. Research indicates that health and quality of life improve significantly when people move away from a sedentary lifestyle to a more physically active one. There are two golden rules when practicing exercise: moderation and gradual exposure to load. It is known that, regardless of age, regular PEx not only affects physical health but also mental health by contributing to well-being and quality of life. PEx reduces the risk of developing heart disease, stroke, high blood pressure, cancer, diabetes and osteoporosis, controls weight, and helps reduce stress. It is recognized that health can contribute to increased productivity, improved mechanical efficiency, and healthier aging, thereby supporting the economic development of a population [24,25].

It is also known that physical inactivity is one of the scourges of this time due to the deep changes in the lifestyle as a result of COVID-19. The consequence is a decrease in physical activity and a move towards a sedentary lifestyle that can contribute to the development of chronic diseases with serious consequences on the health status of the population. It is necessary to react, to motivate the population, and to remind them remain active [1].

The purpose of this manuscript was to propose some initiatives allowing the population to get out of the monotony linked to confinement. These simple physical exercises will ease our dark and heavy daily life in this period. The suggestions are based on research and knowledge on the impact of PEx on human mechanics.

It is recommended to monitor the number of repetitions and the intensity of effort to benchmark the results during the sessions. As an example, it is a question of practicing a sustained, but not excessive, effort. Any new activity should be started slowly and modulated according to the subject’s fitness level. Among the possibilities of holding a normal conversation (the effort is insufficient) and breathlessness (the effort is too great), a good point of reference is the ease of breathing (ability to say a few words).

The strengths of this manuscript are to recommend the practice of PEx that is easy, useful, and suitable to be performed in a small physical space, such as at home without special devices. These tests are well known to researchers and practitioners in the field of physical activity. The contribution is precisely an approach to adapt physical performance tests to be used as exercises by the general population. Considering the pandemic affecting the world, easy-to-perform exercises should be presented to the population, and this study provides an easy solution to this need. Moreover, these simple exercises might be performed during the confinement due to COVID-19 and, in the future, the goal is to stimulate the population to exercise wherever or whenever it would be possible.

6. Limitations

This approach has limitations related to the wide possibility of the exercises that could be performed at home. Moreover, it is relevant to clarify that the proposed exercises are closely related to physical tests that are validated and used to evaluate the physical fitness of individuals with different disorders. However, the selection may have been biased by the experience and knowledge of the authors, a limitation that we must clearly state. Indeed, the approach demonstrates that the tests can also be considered a type of exercise and they can be used to minimize the undesirable biological responses to the sedentary behavior. In addition, caution is suggested, considering the indicated exercises/tests are administered by a trained person, and so it may not be appropriate to everyone. People with low physical conditioning and who may have pre-existing health conditions, such as motor and cognitive limitations, should take caution and ask for help from family or caregivers. People who
have a basic understanding of their own body and level of physical conditioning are recommended to perform these PEx without any help.

7. Conclusions

The goal of this manuscript was to present recommendations to the individuals in this difficult period of confinement. It provides a collection of home-based exercises based on physical tests to stimulate individuals to alter their daily life by practicing the exercises. The benefits of exercise are important and represent a necessary balance to reduce the stress experienced by people around the world. Researchers have a duty to aid the population with their knowledge as, in this moment, highlighting the contribution of exercise to the improvement of the individuals’ quality of life. In fact, several relatively simple exercises are proposed, considering the clinical conditions of each one and the physical space in each home notwithstanding, they can contribute in reducing the sedentary behavior during COVID-19 confinement.

Author Contributions: Conceptualization: D.d.C.d.S.-C. and M.B.-F.; methodology, D.d.C.d.S.-C., M.B.-F., A.S. (Anelise Sonza); formal analysis: R.T., A.S. (Adérito Seixas), B.S., A.S. (Anelise Sonza); investigation: D.d.C.d.S.-C., M.B.-F.; resources: D.d.C.d.S.-C., M.B.-F.; writing—original draft preparation: D.d.C.d.S.-C., R.T., A.S. (Adérito Seixas), B.S., A.S. (Anelise Sonza), M.B.-F.; writing—review and editing: A.S. (Anelise Sonza); visualization: D.d.C.d.S.-C., R.T., A.S. (Adérito Seixas), B.S., A.S. (Anelise Sonza), M.B.-F.; project administration: D.d.C.d.S.-C. All authors have read and agreed to the published version of the manuscript.

Funding: This study was financed by the Coordenação de aperfeiçoamento de pessoal de nível superior—Brazil (CAPES) finance code 001. The Brazilian Agencies (CNPq and FAPERJ) also offered financial support.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Hall, G.; Laddu, D.R.; Phillips, S.A.; Lavie, C.J.; Arena, R. A tale of two pandemics: How will COVID-19 and global trends in physical inactivity and sedentary behavior affect one another? Prog. Cardiovasc. Dis. 2020, 63, 4–6.
2. Singhal, T. A Review of Coronavirus Disease-2019 (COVID-19). Indian J. Pediatr. 2020, 87, 281–286. [CrossRef] [PubMed]
3. WHO. Coronavirus. 2020. Available online: https://www.who.int/health-topics/coronavirus#tab=tab_1 (accessed on 5 May 2020).
4. WHO. Coronavirus Disease (COVID-19) Advice for the Public. 2020. Available online: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public (accessed on 10 May 2020).
5. Kakodkar, P.; Kaka, N. A Comprehensive Literature Review on the Clinical Presentation, and Management of the Pandemic Coronavirus Disease 2019 History of the outbreak. Cureus 2020, 12, e7560. [PubMed]
6. Fernandes, R.M.; Correa, M.G.; dos Santos, M.A.R.; Almeida, A.P.C.P.S.C.; Fagundes, N.C.F.; Maia, L.C.; Lima, R.R. The Effects of Moderate Physical Exercise on Adult Cognition: A Systematic Review. Front. Physiol. 2018, 9, 667. [CrossRef] [PubMed]
7. Kelly, P.; Kahlmeier, S.; Götschi, T.; Orsini, N.; Richards, J.; Roberts, N.; Scarborough, P.; Foster, C. Systematic review and meta-analysis of reduction in all-cause mortality from walking and cycling and shape of dose response relationship. Int. J. Behav. Nutr. Phys. Act. 2014, 11, 132. [CrossRef] [PubMed]
8. Löhler, H.; Böckenhoff, A.; Knapp, G. Physical Activity and All-cause Mortality: An Updated Meta-analysis with Different Intensity Categories. Int. J. Sport Med. 2009, 30, 213–224. [CrossRef]
9. Je, Y.; Jeon, J.Y.; Giovannucci, E.L.; Meyerhardt, J.A. Association between physical activity and mortality in colorectal cancer: A meta-analysis of prospective cohort studies. Int. J. Cancer 2013, 133, 1905–1913. [CrossRef]
10. Fong, D.Y.T.; Ho, J.W.C.; Hui, B.P.H.; Lee, A.M.; Macfarlane, D.J.; Sharron, S.K.; Cerin, E.; Chan, W.Y.Y.; Leung, I.P.F.; Lam, S.H.S.; et al. Physical activity for cancer survivors: Meta-analysis of randomised controlled trials. BMJ 2011, 344, 1–14. [CrossRef] [PubMed]
11. Steffens, D.; Maher, C.G.; Pereira Leani, S.M.; Stevens Matthew, L.; Oliveira Vinicius, C.; Chapple, M.; Teixeira-Salmela Luci, F.; Hancock Mark, J. Prevention of Low Back Pain A Systematic Review and Meta-analysis. *JAMA Intern Med.* 2016, 176, 199–208. [CrossRef] [PubMed]

12. Sjøgaard, G.; Christensen, J.R.; Justesen, J.B.; Murray, M.; Dalager, T.; Fredslund, G.H.; Sogaard, K. Exercise is more than medicine: The working age population’s well-being and productivity. *J. Sport Heal. Sci.* 2016, 5, 159–165. [CrossRef] [PubMed]

13. Marcos, A.; Manonelles, P.; Palacios, N.; Wärnberg, J.; Casajús, J.A.; Pérez MSaznar, U.; Benito, P.J.; Martínez-Gómez, D.; Ortega, F.B.; Ortega, E.; et al. Artículo especial Physical activity, hydration and health. *Medicine* 2014, 29, 1224–1239.

14. Nightingale, E.J.; Pourkazemi, F.; Hiller, C.E. Systematic review of timed stair tests. *J. Rehabil. Res. Dev.* 2014, 51, 335–350. [CrossRef] [PubMed]

15. Alonso, C.; Nata, I.; Luna, M.; Dioni, L.F.N.; André, M.D. Functional Balance Assessment: Review. *Medicalxpress* 2014, 1, 298–301. [CrossRef]

16. Bennell, K.; Dobson, F.; Hinman, R. Measures of physical performance assessments: Self-Paced Walk Test (SPWT), Stair Climb Test (SCT), Six-Minute Walk Test (6MWT), Chair Stand Test (CST), Timed Up & Go (TUG), Sock Test, Lift and Carry Test (LCT), and Car Task. *Arthritis Care Res.* 2011, 63, 350–370.

17. Kim, H.; Park, I.; On, L. The reliability and validity of gait speed with different walking pace and distances against general health, physical function, and chronic disease in aged adults. *J. Exerc. Nutr. Biochem.* 2016, 20, 46–50. [CrossRef]

18. Melo, T.A.; Duarte, A.C.M.; Bezerra, T.S.; França, F.; Soares, N.S.; Brito, D. The Five Times Sit-to-Stand Test: Safety and reliability with older intensive care unit patients at discharge. *Rev. Bras. Ter. Intensiva.* 2019, 31, 27–33. [CrossRef]

19. Patel, H.; Alkhawam, H.; Madanieh, R.; Shah, N.; Kosmas, C.E.; Vittorio, T.J. Aerobic versus anaerobic exercise training effects on the cardiovascular system. *World J. Cardiol.* 2017, 9, 134–138. [CrossRef]

20. Baltaci, G.; Un, N.; Tunay, V.; Besler, A.; Gerçeker, S. Comparison of three different sit and reach tests for measurement of hamstring flexibility in female university students. *Br. J. Sport Med.* 2003, 37, 59–61. [CrossRef]

21. Sá-caputo, D.C.; Ronikeli-costa, P.; Carvalho-lima, R.P.; Bernardo, L.C.; Bravo-monteiro, M.O.; Costa, R.; Moraes-Silva, J.D.; Paiva, D.N.; Machado, C.B.; Mantilla-Giehl, P.; et al. Whole Body Vibration Exercises and the Improvement of the Flexibility in Patient with Metabolic Syndrome. *Rehabil. Res. Practice* 2014, 2014. [CrossRef]

22. Yang, Y.J. An Overview of Current Physical Activity Recommendations in Primary Care. *Korean J. Fam. Med.* 2019, 40, 135–142. [CrossRef]

23. Ketels, M.; Bacquer DD, Geens, T.; Janssens, H.; Korshøj, M.; Holtermann, A. Assessing physiological response mechanisms and the role of psychosocial job resources in the physical activity health paradox: Study protocol for the Flemish Employees’ Physical Activity ( FEPA ) study. *BMCPublHealth* 2019, 19, 1–10. [CrossRef] [PubMed]

24. Booth, F.W.; Roberts, C.K.; Laye, M.J. Lack of exercise is a major cause of chronic diseases. *Compr. Physiol.* 2012, 2, 1143–1211. [PubMed]

25. WHO. Global Strategy on Diet, Physical Activity and Health. Available online: https://www.who.int/dietphysicalactivity/factsheet_myths/en/ (accessed on 17 April 2020).