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Balance as a postural key component (core) for establishing physical state in school program reports

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Abstract

Admit balance control tends to test muscle imbalances, mobility restrictions and postural-control stability problems. Specifically include in Euro fit Fitness Testing Battery and absent in FitnessGram. This cross section-study examined the importance of balancing test as a missing component (core) for establishing a physical state in school program reports. Build on Flamingo Balance test as a messing protocol requested in the FitnessGram battery test. To test this hypothesis, 400 male middle school students, age 13.03 ± 0.56-year, sector education Mostaganem for academic years 2017–2018 participate voluntaries in the present study. Classified into two groups based on their levels falls up or down to 5 in Flamingo Balance. Build on studying design, protocol and statistics applied. Our results claim balance as a key component functional fitness related to both lumbar and trunk muscular fitness strength endurance and flexibility. Recommend by this study as key assessing test motor fitness. Need to be integrated into FitnessGram to evaluate deficits in improvements postural-control related to muscular fatigue, which ultimately affects balance performance during ordinary tasks or complex dynamic activities.

Keywords: FitnessGram, policy, student fitness, middle school

Introduction

The Physical Fitness Test represents a criterion-referenced test of health-related fitness. Reviewed by scientists as a critical factor in the prevention of infectious diseases resulting from the unhealthy lifestyle among boys and girls of different school-age (Mohammed Z, 2018). Supported in the academic system by their enhancements of school-based physical activity interventions (Mohammed Z, 2017). Recommended by specialists in those topics as a series of tests of physical fitness designed to assess the health-related fitness status in children and adolescents (Cooper Institute for Aerobics Research, 2017). Collected based on gender and age and their associations with the Healthy Fitness Zone (HFZ). The case of the California Department of Education as an efficient health level measure of physical fitness (Zerf M, 2019). Established by the Cooper Institute as an easy way for physical education teachers and students to assess fitness level and interpret the results (California Department of Education, 2017). Proposed under five Components of Physical (Cardiovascular endurance using One-Mile Run / 20m PACER / Walk Test, Body

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Composition using Skinfold Measurements / Bioelectric Impedance Analyzerpercent body fat or Body Mass Index, Abdominal Strength and Endurance using Curl-Up using Trunk Extensor Strength and Flexibility, Upper Body Strength and Endurance using Push-Up or Modified Pull-Up, power and Flexibility using Back Saver Sit & Reach) (Jacqueline K and Dan J G, 2014). The opposite of Eurofit Fitness Testing Battery which adds to the president's speed, agility and balance tests for assessing motor fitness (Feng L, Weihua W, Jingang Ma, Rina Sa & Guihua Z, 2018). Estimated based on 10 x 5-meter Shuttle Run to measures running speed and agility (Derrick S, Jacklyn B, 2010) and Flamingo Balance test (Mark Corrie & Sharon Teesdale, 2004) to assesses the strength of the leg, pelvic, and trunk muscle as well as dynamic balance (Hills A.P., Dengel D.R., and Lubans D.R., 2015). Admit Physical fitness as a key indicator of health in children and adolescents and can predict the health status in the later phases of an individual's life (Kolimechkov S, 2017). This cross-study examine the impact of balance as a missed component test in FITNESS GRAM battery test aims to inspect the impact of prolonged sittings on both lumbar flexion and trunk muscle activation. Supported by users under the employment of the Flamingo Balance Test falls. As a protocol to divide the sample into two groups and estimate the impact of this difference on their results in the FITNESS GRAM battery test.

Materials and Methods

Admit Physical fitness as a multidimensional structure and can be assessed through variant and different components like body composition, cardiorespiratory fitness, musculoskeletal fitness, motor fitness, and flexibility.

Our study bases its investigation on Fitness Gram and Eurofit as the most testing programs for School-Age Children fitness assessments. Aimed in this study based on the balance test as specific test includes in Eurofit Fitness Testing Battery and absent in FitnessGram.

Study Population and Design

To test the impact of balance testing as an important component of motor fitness status in children and adolescents. We classified 400 male middle school students from Mostaganem academic sectors, aged 13.03 ± 0.56 years. In two groups based on their falls up or down to 7 in Flamingo Balance. See **Table 1.**

Table 1. Present the data of the total sample agreements to the variables tested.

Variables	Min	Max	Mean	Stad deviation
Gender	–	–	–	–
Age (year)	12	16	13.45	0.9
Height (cm)	136	170	143.84	5.25
Weight (kg)	39.33	58.8	48.59	9.33
Body Max Index (kg/m^2)	22.5	27.2	24.8	4.02
Curl-up (n)	3	24	12.88	5.52
Push-up (n)	5	31	17.86	6.94
20m stage run (laps)	4	7.8	5.22	3.08

Back-saver sit and reach (cm)	5.55	7.22	6.32	7.33
Trunk lift (cm)	4.82	12.25	10.33	4.55
Flamingo Balance Test	10	15.56	14.47	10.11

Test Protocol

We based precisely on test system FITNESS GRAM typically developed by the Cooper Institute in Dallas under the practical guidance of the Advisory Council, composed of leading U. S. Experts. Consists of five selected tests for the assessment of the physical fitness components:

- **Aerobic capacity** (20m stage run): The test involves continuous running between the two lines in time to record beeps. The score is the total laps completed.
- **Curl Up**: the test measures abdominal strength and endurance and core stability. The score is the total number of curl-ups.
- **Push Up**: The test measures upper body strength and endurance. The score is the total numbers of correctly completed push-ups.
- **Back-saver sit and reach**: Designed to measure the flexibility of the left and right legs separately. The score is recorded to the nearest centimetre or half inch as the distance reached by the tip of the fingers.
- **Trunk lift**: requires the participant to lift the upper body off the floor using the muscles of the back, and hold that position while the height is measured. The score is the distance from the floor to the chin.
- **Body Mass Index** (BMI) was then calculated using the formula weight (kg)/height2 (m)2.

All tests were performed three times and the best score was retained for investigation except for the sit-up test to exhaustion, which was performed only once. All participants were tested during school hours, from 9 to 12 am, by the same investigator. Anthropometric measures of each participant were assessed using a scale with a 0.1 kg sensitivity (Mohammed Z, 2019) (Seca 709, Seca, Hamburg, Germany) for weight and a wall-stadiometer with a 1 mm sensitivity (Mohammed, Z, 2017) (Seca 220, Seca) for heights (Virginia A. A, Soriano-Maldonado A, Buitrago F, Félix-Redondo F and Fernández-Bergés D, 2016).

For balance, we based on **Flamingo Balance** Test total body balance test and forms part of the Eurofit Testing Battery. This single-leg balance test assesses the strength of the leg, pelvis, and trunk muscle as well as dynamic balance. In this test the subject is standing on his preferred foot, bends his free leg backwards and grips the back of the foot with the hand on the same side, standing like a flamingo. The test measuring times and total number of falls or loss of balance in 60 seconds (Narinrat S, Korakod P and Amornphan A, 2017).

Statistical Analysis

Data entry and analysis were done using SPSS 21 (SPSS for Windows, SPSS Inc., and Chicago, IL, USA). İndependent T-test was used to analyse the changes in child performance based on Flamingo balance groups classifications and FITNESS GRAM standards. All statistical significance was limited at $p \leq 0.05$.

Results

Table 2: Present independent t-test based on Flamingo balance groups classifications and FITNESS GRAM standards child performance.

T-test P≤0.05	N 400	Flamingo balance	Body Max Index	Curl-up	Push-up	20m stage run	Back-saver sit and reach	Trunk lift (cm)
Balance Up to 7 falls	168	6.12*	20.87*	4.78*	14.22*	12.86	16.78*	11.82*
BalanceUp to 7 falls	242							

Based on independent T-test used to analyse the changes in child performance based on Flamingo balance groups classifications and FITNESS GRAM standards. Our results confirmed balance as a missed test in Fitness Gram. Its use predicts the impact of balance levels on both lumbar flexion and trunk muscle capacity for movement-action.

Discussion

Considering Physical fitness as a key indicator of health in children and adolescents and can be assessed through different components (Kolimechkov S, 2017). Basing on balance as a motor ability movement skill foundation properly includes a key test in the Eurofit Testing Battery requested in FITNESS GRAM battery test that is admitted by similarities as a policy tool requested in the education systems to assess five components of health-related fitness (eg., aerobic capacity, muscular strength, muscular endurance, flexibility, and body composition). Our results in one hand confirmed Fitness Gram, as a valid based school physical fitness assessment (John S, 2013). Supported in the other hand by balance as the missing test to explain changes in the kid's capacity FITNESS GRAM components.

Interpret by the present study based on the child Flamingo balance falls poorly associated with dynamic trunk stability, postural instability and child BMI increasements (Alicia C. S and Laura F. P, 2018).

Been demonstrated in Algerian similarities to be higher in children who were more physically active, had smaller body mass index (BMI) and were less sedentary (Mohammed Z, 2018).

Admitted in this study as indispensable analysis data able to explain changes in the child FITNESS GRAM achievements. Documented in this study as a valid test or component school-based fitness tests (Heneghan R N, Baker G, Thomas K, Deborah F, and Alison R, 2017). Need to be integrated into FitnessGram to evaluate deficits in improvements postural-control related to muscular fatigue, which ultimately affects balance performance during ordinary tasks or complex dynamic activities.

Conclusion

Regarding the study limitation (sample and lack of police standards referred to Algerian schools or populations). Our results confirmed balance as a missing postural key component (core) requested to be integrated into Fitness Gram. Estimated in this as a key test to explain changes in the kid's capacity FITNESS GRAM components.

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Conflicts of interest

There are no conflicts of interest.

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