122 - WELLS BENCH AND DILLON AND ITS FUNCTIONALITY IN OBTAINING MEASUREMENTS OF THE PHYSICAL COMPONENT FLEXIBILITY

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INTRODUCTION

Derived from the Latin flectere or flexibilis, the term flexibility has the meaning of "bow" (BERTOLLA et al., 2007). According to BARBANTI (2003), flexibility is characterized by the ability to perform joint movements with an appropriate range. It is also the ability of a joint to moves with a great range (TRITSCHLER et al., 2000).

Flexibility is an important component of physical fitness and can be defined as the maximum passive physiological amplitude of a joint movement , yet we can see that this physical quality is many times overlooked.

This important physical quality is essential not only for athletes or active individuals but also for sedentary people, with sports performance or a simple daily activity, affected by an impaired range of motion (MARCHAND, 2002.; ARAÚJO, 2008).

In recent years, there is a greater inclusion of tests that evaluate the degree of flexibility of an individual in a series of tests related to physical fitness involved in health promotion, believing that greater flexibility is related to pain in lower back and musculoskeletal injuries (HEYWARD, 2004).

The procedures for assessing the flexibility of a given joint movement should take into consideration the specific motor because the tests are directly related to the type of movement you want to evaluate . Thus, there is no single test to assess the flexibility of the whole body because of the variables appearing on this physical quality (ACSM, 2000).

Flexibility is a physical quality with relative simplicity in regard to evaluation, but establish accurate and reliable results of the actual range of motion in each articulation studied has a lot of controversy behind, so it is required more studies to solve this problem (ACHOUR, 1999).

Flexibility can be decomposed into two types: static and dynamic . The static component refers to the maximum amplitude of a movement. In turn, the dynamic component is connected to the resistance or stiffness offered to motion in certain range and is typically quantified in research situations, by the force around an axis (torque).

The test that will be addressed in this research is the sit and reach test, widely used in physical assessments, because of its simplicity to be applied in regard to the need of short time for their application, need a small space for the application of the test, device relatively easy to be obtained on account of its low cost, being easy to transport, so a safe method for the evaluated and the evaluator, being a test applied to a large number of individuals (ACHOUR, 1999). Therefore it is considered a straight-line method, characterized by the presentation of results with the help of a metric scale fixed in the bank (ARAÚJO et al., 2002; JÚNIOR; BARROS, 1998).

Therefore, this work falls within the scope of sports science, regarding the use of the sit and reach test for flexibility test, therefore, for the purpose of literature review, it will cover: (i) Description of the test, (ii) Strengths and advantages of applying the test, (iii) weaknesses or disadvantages of the test.

METHODOLOGY

For this, a survey was conducted in scientific databases aimed at health and physical activity, that are Scielo, Lilacs and Bireme, based on key words: flexibility, physical assessment, sit and reach test, being found both in Portuguese and English and, as time cohort, the period from 2000 to 2011.

LITERATURE REVIEW

Description of test

The sit and reach test is a straight-line method originally proposed by Wells and Dillon in 1952 . In this method, the subject sits with legs fully extended, feet slightly apart and flat against a bulkhead wood approximately 25 cm tall. On the screen, at right angles, you are putting a ruler graduated in centimeters. The test should be done barefoot so there is no addition to the size of the lower limbs. The individual is asked to carry out four pushups of the trunk, keeping the knees, elbows and wrists in extension. On the fourth attempt, the individual shall maintain, for a moment, the maximum position reached with the tip of his fingers, in order to perform the reading of the rule. For this purpose, should be considered as the zero point of contact of the feet with the screen, making it possible to obtain negative and positive values, when the tips of the fingers fail to meet or exceed the screen, respectively .

However, the American College of Sports Medicine says that to perform the sit and reach test, the participant must perform a preheating, with light stretching exercises. Subsequently, should sit on the floor with legs extended, with the plantar region supported by the bank (against the wall). With your arms extended over your head and hands parallel, performing three trials, with rest intervals, and slowly bend the trunk to the maximum, keeping the legs straight. Must register the highest rate reached (ACSM, 2000).

Considerations on the sit and reach test Wells and Dillon

Many batteries of tests to evaluate the level of flexibility of an individual commonly use the sit and reach test, for thinking that it would be a measure that actually assesses the fitness flexibility (SILVA et al., 2006). It is thought that this test can accurately assess the level of flexile ischiotibial muscles and lower back (American Alliance for Health, Physical Education, Recreation and Dance, 1980.; American Alliance for Health, Physical Education, Recreation and Dance, 1988.; Eurofit Council of Europe, 1988.; MARQUES et al., 1991). But it is not what has been found in the literature (JACKSON; BAKER, 1986.; SIMONEAU, G. G. 1998.; GRENIER, 2003), this test does not measure the flexibility of the ischiotibial muscles.

According to Wells and Dillon (1952), validation of the test was proven and its reliability is regarded as excellent. Several questions and criticisms have been developed over the years due to the limitations of the test and instruments needed to evaluate the lower back muscles and ischiotibials at the same time (RIBEIRO, 2006).

Questions and findings were reported on the influence of the trunk, and the length of the upper and lower members on

the scores obtained with the test (FERNANDEZ; STUBBS, 1989). Several authors have also come to criticize the validity of the test under study, recommending proposals for other tests such as the V-sit and reach test and Back-saver sit and reach, as well as other protocols to meet the need that the test of Dillon & Wells presented (RIBEIRO 2006).

The results obtained with the sit and reach test are based on assessments made by means of tables prepared in accordance with the gender and age of the individual (ACSM, 1995). As with most tests, it is more about Canadian populations and U.S., so there was a lack of tables validated for the reality of other ethnic groups, genetic, age and gender (BEIGHTON et al., 1973), including our population who is so diverse and difficult to assess with real precision.

Corroborating the idea of creating a more specific table for certain populations, a study by Ribeiro et al., (2010), to evaluate the level of flexibility with the sit and reach test, where the majority of their sample had individuals assets of different ages and of both gender, it was found that although most the samples be practitioners of regular physical activity, as a result the table used for the Canadian population is inappropriate when used for populations that do not have characteristics, taking the Brazilian levels of flexibility below the values recommended by the table, regardless of gender or age.

Studies were conducted on the reliability of this test to evaluate the shortening of the ischiotibial muscles using opaque skin markers and a camera, and it was positioned in the anatomical landmarks greater trochanter and anterior superior iliac spine. They measured the reliability of the original test (Wells Bench no door, feet fixed to 90 ° dorsiflexion) in the observation of a possible shortening of the muscles ischiotibials compared with the Wells Bench made with a door to the gastrocnemius muscle could be free in one of your joints (CARDOSO JÚNIOR et al., 2007).

The result was that the test done with the bank having a special door, proved more reliable in the perception and evaluation of a possible shortening of ischiotibials than traditional bank Wells, where the latter could lead to a false perception that ischiotibial muscles were indeed shortened, because while bending the trunk, the individual may be tension in the posterior thigh, which could interfere with proper use of the test. The bank made with the door keeps the distal joint of the gastrocnemius muscles free, isolating it so that it will not affect the results. Biarticular muscles as well should be free in one of its joints in order to obtain a better range of movement in other joints (KENDALL et al., 1995).

So, Fernandez e Stubbs (1989), have demonstrated that the sit and reach test proposed by Wells and Dillon is not a good resource for measuring the flexibility of the ischiotibials muscles and to verify the lumbar flexibility in populations taken as normal, noting heavy influence of anthropometric measurements, being a recommendation made by the authors mentioned that the test be performed without the box.

Strengths or advantages of applying the test

The sit and reach test is often used in evaluations of the fitness standard (as an example, the battery test Canadian Physical Activity, Fitness & Lifestye [CPAFLA]), justifying the assumption that it is an indicator of health lumbar .

The sit and reach test has been used to measure the flexibility of the lumbosacral region of the hip joint and the coxofemoral joint . The reasons that cause it to be widely used procedures are due to simple execution and low cost purchasing .

Disadvantages or weaknesses of the test

However, when analyzing whether lumbar flexibility is the result of a history of low back disorders and if the test is an indicator sit and reach flexibility back, it was found that such testing is unable to distinguish between those with a history of discomfort and subjects without low back discomfort .

The sit and reach test involves full body movements, so your score may be influenced by many factors anthropometric and joint flexibility in the shoulders, upper spine, and upper extremities .

As flexibility is not a uniform component in all the joints of an individual, it is common that a person has an optimal level in a range that has been given joint, limitation or limitations of range of motion in other joints (ARAÚJO, 1986).

In addition, the ratio of the length of the legs and arms was also impact the results of the sit and reach test, and may thus, affect the correlations for lumbar flexibility .

CONCLUSION

The sit and reach test is old, 50's, however, is still widely used in research and as a tool to evaluate flexibility.

Taking into account a number of definitions for the term flexibility, that would be given a greater range of motion obtained by a joint, it is observed that the amplitude of a given joint does not necessarily establish a relationship with another joint. Thus, the flexibility would not be considered a global feature, therefore the test under study does not qualify an individual as flexible or not.

The sit and reach test does not provide measures of flexibility in a given joint, where the coxofemoral joint, because the range of motion is given in degrees, providing only a test given in centimeters as the distance at which the individual can reach in his trunk flexion. To assess the actual level of flexibility, there is a device that measures the range of motion in degrees called Fleximeter.

Therefore, it is concluded that the test does not show precision as had been thought to apply it to physical assessments as a parameter entirely reliable for verification of the degree of flexibility of the lumbosacral region of the hip joint and the coxofemoral joint, it does not make distinction between the flexibility of these three joints cited, in other words, does not differentiate flexibility in each joint, is just a test to assess the distance in centimeters that an individual can achieve, making a trunk flexion with legs extended. However, it is still considered one of the most widely used in physical assessments because it is a practical method, low cost and if you cannot buy it, it becomes a viable method, since it is easy to fabricate.

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WELLS BENCH AND DILLON AND ITS FUNCTIONALITY IN OBTAINING MEASUREMENTS OF THE PHYSICAL COMPONENT FLEXIBILITY

ABSTRACT

The flexibility, as physical quality is of great importance in physical fitness and quality of life of individuals. The sit and reach test proposed by Wells and Dillon is widely used to assess the flexibility of practitioners of various sports and health oriented. However, its use receives critics regarding the correct application of the test, as well as its validity as criteria for checking the flexibility of the lumbosacral region, the coxofemoral joint and hip joint. The aim of this study is to assess the positive or strong and negative or disadvantageous in the application of sit and reach test proposed by Wells and Dillon. For this, a survey was conducted in scientific databases oriented in health and physical activity, that are Scielo, Lilacs and Bireme, based on key words: flexibility, physical assessment, sit and reach test, and consulted both in Portuguese and English and, as time cohort, the period from 2000 to 2011. The strengths of this test were observed: its low cost and accessibility, being a simple test. The negative or disadvantageous: inaccuracy in the application of tests so that no one notices or it is able to flex the knee joint at the time of collection; overcompensation of the glenohumeral joint to achieve a greater distance, the disproportionate length of the trunk to upper and lower members, taking advantage in reaching more distant points. Therefore, we conclude that the test does not show such precision as had been thought to apply it to physical assessments as a totally reliable parameter to check the degree of flexibility of the lumbosacral region, the hip joint and the coxofemoral joint.

KEY WORDS: Flexibility. Physical Evaluation. Sit and reach test.

BANQUE DU WELLS ET DILLON ET SA FONCTIONNALITÉ DANS OBTENIR MESURES PHYSIQUES DE COMPOSANT SOUPLESSE

SOMMAIRE

La flexibilité tandis que la qualité physique est d'une grande importance dans le développement physique et la qualité de vie des individus. Le sit et tester rejoindre proposée par Wells et Dillon est largement utilisé pour évaluer la flexibilité de pratiquants de diverses disciplines sportives et / ou axés sur la santé. Cependant, son utilisation sous les critiques quant à l'application correcte de l'épreuve, ainsi que sa validité en tant que critère pour vérifier la souplesse de la région lombo-sacrée,

l'articulation de la hanche et articulation de la hanche. L'objectif de cette étude est d'évaluer les points positifs et les négatifs ou forte ou désavantageux dans l'application de la flexion du tronc d'essai proposée par Wells et Dillon. Pour cela, une enquête a été menée dans les bases de données scientifiques visant à la santé et l'activité physique, et ces Scielo, Lilas et BIREME, basé sur des mots clés: flexibilité, l'évaluation physique, la flexion du tronc d'essai, être trouvé à la fois en portugais et en anglais et, comme la cohorte de temps, la période de 2000 à 2011. Les points forts de ce test ont été observés: son faible coût et d'accessibilité, avec une exécution simple test. Le négatif ou désavantageux: inexactitude dans l'application des tests afin que personne ne s'en rende compte ou vous permettent de flexion de l'articulation du genou au moment de la collecte; surcompensation de l'articulation scapulo-humérale pour atteindre une plus grande distance, la longueur démesurée des membres du tronc supérieure et inférieure, profitant à atteindre les plus éloignés. . Par conséquent, il est conclu que le test ne montre pas une telle précision que l'on pensait à l'appliquer à des évaluations physiques comme un paramètre tout à fait fiable pour la vérification du degré de flexibilité de la région lombo-sacrée de l'articulation de la hanche et l'articulation de la hanche.

MOTS-CLÉS: la flexibilité. Évaluation physique. Asseyez-vous et rejoindre l'essai.

BANCO DE POZOS Y DILLON Y SUS FUNCIONES EN LLEGAR MEDIDAS FÍSICAS DE COMPONENTE DE FLEXIBILIDAD

RESUMEN

La flexibilidad, mientras calidad física es de gran importancia en el estado físico y en calidad de vida de las personas. La prueba de sentarse y alcanzar propuesto por Wells y Dillon es ampliamente utilizado para evaluar la flexibilidad de los profesionales de distintas asignaturas deportivas y/o dirigidos en la salud. Sin embargo, su uso recibe críticas con respecto a la correcta aplicación de la prueba, así como su validez como criterio para el control de la flexibilidad de la región lumbosacra, la articulación coxofemoral y la articulación de la cadera. El objetivo de este estudio es evaluar los puntos positivos o fuertes y los negativos o desventajosos en la aplicación de la prueba de sentarse y alcanzar propuesta por Wells y Dillon. Para ello, se realizó una encuesta en las bases científicas para la salud y la actividad física, y estos Scielo, Lilacs y Bireme, partir en las palabras claves: flexibilidad, evaluación física, sentarse y alcanzar a prueba, que se encuentra tanto en portugués como inglés y, como cohorte de tiempo, el período de 2000 a 2011. Los puntos fuertes de esta prueba se observaron: su bajo costo y accesibilidad, con la ejecución de un simple test. La negativa o desfavorable: la inexactitud en la aplicación de las pruebas para que nadie se dé cuenta o se permita a la flexión de la articulación de la rodilla en el momento de la recolección; exceso de compensación de la articulación glenohumeral para lograr una mayor distancia, la duración desproporcionada de los miembros del tronco superior e inferior, aprovechando para llegar a los más distantes. Por lo tanto, se concluye que la prueba no muestra tanta precisión como se había pensado para aplicarlo a las evaluaciones físicas como un parámetro del todo fiable para la verificación del grado de flexibilidad de la región lumbosacra de la articulación coxofemoral y la articulación de la cadera.

PALABRAS CLAVE: Flexibilidad. Evaluación física. La prueba de Sentarse y alcanzar.

BANCO DE WELLS E DILLON E SUA FUNCIONALIDADE NA OBTENÇÃO DE MEDIDAS DO COMPONENTE FÍSICO FLEXIBILIDADE

RESUMO

A flexibilidade enquanto qualidade física tem uma grande importância na aptidão física e na qualidade de vida de indivíduos. O teste de sentar e alcançar proposto por Wells e Dillon é amplamente utilizado para avaliar a flexibilidade de praticantes das mais diversas modalidades esportivas e/ou voltadas para saúde. Contudo, sua utilização recebe críticas no tocante a correta aplicação do teste, assim como em sua validade como critério de verificação da flexibilidade da região lombossacra, da articulação coxofemoral e da articulação do quadril. O objetivo do presente estudo é verificar os pontos positivos ou fortes e os negativos ou desvantajosos na aplicação do teste de sentar e alcançar proposto por Wells e Dillon. Para isto, foi realizada uma pesquisa em bases de dados científicas direcionadas a saúde e atividade física, sendo estas Scielo, Lilacs e Bireme, a partir dos unitermos: flexibilidade, avaliação física, teste de sentar e alcançar, sendo consultados tanto na língua portuguesa quanto inglesa e, como coorte temporal, o período de 2000 a 2011. Os pontos positivos observados deste teste foram: seu baixo custo e acessibilidade, sendo um teste de simples execução. Os negativos ou desvantajosos: imprecisão na aplicação do testes de forma em que não se perceba ou se permita a flexão da articulação do joelho no momento da coleta; a supercompensação da articulação glenoumeral para se alcançar uma distância maior; o comprimento desproporcional ao tronco de membros superiores e inferiores, levando vantagens no alcance de pontos mais distantes. Portanto, conclui-se que o teste estudado não apresenta tanta precisão como se pensava ao aplicá-lo em avaliações físicas como um parâmetro totalmente confiável para verificação do grau de flexibilidade da região lombossacra, da articulação do quadril e da articulação coxofemoral.

PALAVRAS-CHAVE: Flexibilidade. Avaliação Física. Teste de sentar e alcançar.