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Criterion Validity Of Various Components Of Recreational Physical Fitness Test For School Going Children

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ABSTRACT
Aim: The purpose of this study was to establish criterion validity of newly developed recreational tests on various components of physical fitness.
Methods: The subjects for this study were selected from several government high schools in the Jammu district. The participants were boys between the ages of 13 and 15, selected using the simple sampling technique. There are almost 180 government high schools in the Jammu district, thus 20 were chosen at random to conduct this study. To develop norms the data was collected from the 1120 high school boys. The recreational physical fitness tests were constructed for selected fitness components which were agility, strength, endurance, speed and coordination. Face validity was developed for the test items based on reports and recommendations from various officials and experts, as well as information obtained from existing literature and their face values. Also the criterion validity was established by correlating the scores of new developed recreational fitness tests with the standardized physical fitness tests using pearson product moment correlation coefficient.
Results: All the constructed recreational physical fitness i.e recreational agility test, recreational upper body strength test, recreational abdominal strength test, recreational hand eye coordination test and recreational speed test showed high criterion related validity.
Conclusion: The study's findings revealed that the newly constructed recreational physical fitness tests satisfied the criterion validity and will be used to assess the fitness of school going children in a recreational way.

Keywords: Recreation, physical fitness, speed, strength, endurance, agility, coordination

INTRODUCTION

"Recreational physical activities provide a diverse perspective of movement that attracts every person's mind and body, outside the boundaries of scheduled workouts and competitive events" (Kerr et al., 2015). Recreational activities help to discover the hidden abilities inside our bodies, encouraging a symphony of physical, mental, and social well-being. These activities can range from the calm activity of an early morning walk to the pounding excitement of a Zumba class. According to Warburton et al. (2016), recreational activities serve as a barrier against long-term illnesses, reducing the incidence of diabetes, heart disease, and even some types of cancer. "Physical activity releases endorphins, which act as our body's natural anesthesia, lowering stress and anxiety and improving memory and cognitive performance" (Dishman & Biddle, 2010). "Also, it was found that recreational activities improve bone density, build and maintain muscle mass, and enhance the cardiovascular system" (Tudor-Locke et al., 2011). "Recreational activities serve as a strong mediator for mental wellness, delivering a break from the everyday routine and a place for self-discovery and personal growth" (Pretty et al., 2005). "Movement helps to establish a relationship with ourselves, promoting a sense of happiness and confidence, whether it's through the peaceful mindfulness of yoga or the thrilling rush of achieving a difficult climb" (Söderström et al., 2013). It can fuel the creative spark, presenting fresh perspectives and remedies to life's problems. But occasionally, the whole work of leisure activities might fall apart, just like any rhythm. "The pressure to win, the aim of unachievable fitness objectives, and the commercialization of exercise may transform the joy of physical activity into a burden" (Pedlar & Ruddock, 2019). It's critical to keep in mind that the real joy of leisure physical activities is found in movement itself, in celebrating the potential of our bodies, and in developing a strong bond with both the environment and ourselves. Rather than in external confirmation or endless competition. Therefore, let's inhale deeply, go outside, and sense the life-giving energy under our soles. Grab some equipment, like a dancing groove, a frisbee, or a pair of trekking boots, and join the joyful music of relaxation physical activities. Allow the leisure of physical activity to lead a less stressful, happier, and healthier life where every action serves as a lever towards personal achievement.

"One's ability to carry out routine tasks with energy and without experiencing undue tiredness is a standard definition of physical fitness" (Caspersen et al., 1985). Numerous physiological systems, such as the respiratory, musculoskeletal, neuromuscular, and circulatory systems, must be integrated to maintain and enhance these systems. To achieve the highest level of physical fitness, regular exercise and physical activity are crucial. A person's ability to be physically active is essential to their general health and wellbeing. Physical fitness is usually divided into two categories: health-related fitness and skill-related fitness. Both components improve general well-being and performance in various physical pursuits. These components are critical in lowering the risk of chronic illnesses, increasing physiological performance, and promoting overall well being. Cardiorespiratory endurance is a key component of health-related physical fitness. This

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component emphasizes the circulatory and respiratory systems' effectiveness in providing oxygen to working muscles during prolonged activity. It is the foundation for exercises requiring persistent effort, such as jogging, swimming, and cycling. Muscular strength is another important health factor, focusing on the maximum force that a muscle or muscle group can generate during a single contraction. Weightlifting and resistance exercises improve overall strength, which leads to greater everyday functionality and a lower chance of injury. Muscular endurance, in addition to muscular strength, is concerned with muscles' capacity to conduct repeating contractions over a lengthy period of time without becoming fatigued. This component is essential for tasks that require persistent effort, such as lengthy walks or carrying groceries. Flexibility, an often ignored component, refers to the range of motion around joints. Stretching activities, yoga, and Pilates can help improve flexibility, reduce the risk of musculoskeletal injuries, and increase general mobility. Finally, body composition refers to the percentage of body fat to lean body mass. "Maintaining a healthy body composition through a balanced diet and regular exercise is connected with a reduced risk of obesity-related disorders and an increase in general health" (Kluwer, 2018). Physical fitness tests are carefully constructed assessments that examine several aspects of one's physical fitness. These assessments are useful for assessing health-related and skill-related factors, forming the foundation for designed exercise prescriptions, tracking progress, and making educated fitness intervention decisions. To ensure accuracy and efficacy in measuring an individual's physical capabilities, these tests must be carefully developed with scientific principles, reliability, and validity in mind. The first step in creating physical fitness tests is to have an adequate understanding of the particular components of fitness that are being evaluated.

MATERIALS AND METHODS

Participants

The aim of this study was to establish a criterion related validity of newly constructed recreational physical fitness tests for school going children. The subjects for this study were chosen from the various government high schools in the Jammu district. The subjects were boys having ages ranging from 13 to 15 years. A sample of 120 boys were selected to construct recreational physical fitness tests. As there were nearly 180 government high schools in the Jammu district, 20 schools were randomly selected to develop the norms for newly constructed recreational physical fitness tests..

Procedure

The test items were carefully identified, and the identified test items were closely related to the various selected fitness components. Many studies have found that recreational physical activities are strongly linked to physical fitness. Regardless of personal observation, the researcher had conducted extensive related literature searches (Internet, Library, journals, Books, etc.) to select the appropriate physical fitness components. Various test and measurement books, as well as various internet content were used to familiarize with the test construction procedure. Recreational physical fitness tests were constructed for selected fitness components, including agility, strength, endurance, speed, and coordination.
A sample of 60 students from two schools were chosen for the first phase of research as a subject related to the preliminary skill for the formation and construction of recreational physical fitness tests. The preliminary study provided better understanding of the difficulties in conducting the tests and to assess the accuracy of evaluating physical fitness components. Following the preliminary construction and development of the test items, modifications and changes were made to the testing procedures and measurements following consultation with the experts and guide. Later, 120 students from four schools were chosen to construct the recreational physical fitness tets. For the validity of the tests, experts who had rich knowledge on recreational games and activities were chosen. Following were the chosen experts:

- Dr. Joseph Singh

Professor, Department of Sports Biomechanics, LNIPE, Gwalior

- Dr. Amandeep Singh

Professor and Head, Guru Nanak Dev University, Amritsar

- Dr. Nishan Singh Deol

Professor and Head, Punjabi University, Patiala

- Dr. Vinita Bajpai

Associate Professor, Department of Sports Biomechanics, LNIPE, Gwalior

- Dr. Yajuvendra Singh Rajpoot

Associate Professor, Physical Education , LNIPE, Gwalior

- Dr. Yatendra Kumar Singh

Associate Professor, LNIPE, Gwalior

Following were the test items which were tested and finalized for the final recreational physical fitness test items:

TEST ITEM	OBJECTIVE
Recreational Agility Test	To assess agility

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Recreational Abdominal Strength Test	To assess strength and endurance
Recreational Upper Body Strength Test	To assess strength and endurance
Recreational Hand Eye Coordination Test	To assess coordination
Recreational Speed Test	To assess speed

Validity

Face validity was established for the test items chosen to serve as the criterion for measuring school children's physical fitness. All recreational fitness tests were chosen based on the reports and recommendations of various officials and experts, as well as information gleaned from available literature and their face values. The criterion validity was also established by correlating the scores of newly developed recreational physical fitness tests with the already standardized physical fitness tests. The standardized physical fitness tests which were used for the establishment of criterion validity were shuttle run test, alternate hand Wall Toss Test, push ups test, bent knee sit up and 50 meter dash.

Statistical Procedure

Descriptive statistics such as mean, median and standard deviation was used. In order to establish criterion validity, the two sets of scores collected for the newly constructed recreational physical fitness tests and the standardized physical fitness were correlated using the Pearson product moment correlation coefficient.

RESULTS

The recreational physical fitness tests were tested for criterion validity at various stages, and data were gathered for statistical analysis. The following statistics were produced in order to gather useful data. The mean and standard deviation of the recreational physical fitness tests were independently evaluated. Pearson Product Moment Correlation Coefficient (r) significant testing at the level of 0.05 was used to assess the criterion validity.

Table 1 Descriptive Analysis of Various Components of Recreational Physical Fitness Tests

Variable	N	Mean	Minimum	Maximum	Range	Standard Deviation	Standard Error
Recreational Agility Test	1122	13.03	11.04	14.99	3.95	1.17	0.82
Recreational Hand Eye Coordination Test	1122	32.04	16	48	32	9.59	6.78
Recreational Upper Body Strength Test	1122	32.21	16	50	34	9.19	6.50
Recreational Abdominal Strength Test	1122	31.69	14	48	34	9.49	6.71
Recreational Speed Test	1122	4.49	3.51	5.48	1.97	0.55	0.39

Table 1 presents the descriptive analysis of the various components of recreational physical fitness tests. The mean scores of 1122 samples for recreational agility test, recreational hand eye coordination test, recreational upper body strength test, recreational abdominal strength test and recreational speed test came out to be 13.03, 32.04, 32.21, 31.69 and 4.49 respectively. The minimum values of recreational agility test, recreational hand eye coordination test, recreational upper body strength test, recreational abdominal strength test and recreational speed test came out to be 11.04, 16, 16, 14 and 3.51 respectively. Further, the maximum values of recreational agility test, recreational hand eye coordination test, recreational upper body strength test, recreational abdominal strength test and recreational speed test came out to be 14.99, 48, 50, 48 and 5.48 respectively. Further, the standard deviation values of recreational agility test, recreational hand eye coordination test, recreational upper body strength test, recreational abdominal strength test and recreational speed test came out to be 1.17, 9.59, 9.19, 9.49 and 0.55 respectively.

Figure 1 Graphical Representation of Mean, Standard Deviation and Standard Error of Various Components of Recreational Physical Fitness Tests

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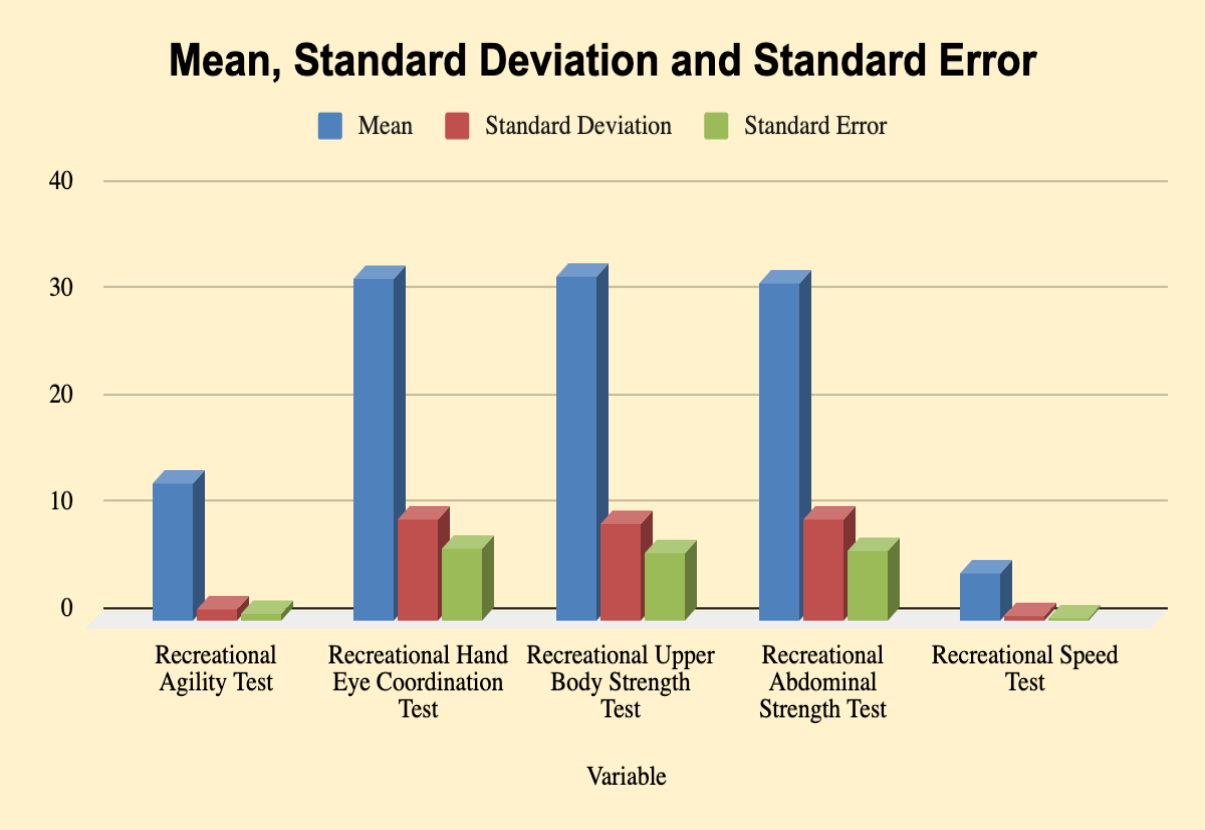

Table 2 Correlation Coefficient of Various Components of Recreational Physical Fitness Tests with the Standardized Tests

Newly Constructed Tests	Standardized Tests	Correlation Coefficient
Recreational Agility Test	Shuttle run	0.828
Recreational Hand Eye Coordination Test	Hand Eye Coordination Test	0.856
Recreational Upper Body Strength Test	Push Ups	0.855
Recreational Abdominal Strength Test	Sit Ups	0.943
Recreational Speed Test	50 Meter Dash	0.914

Table 2 shows that the correlation coefficient for the newly constructed recreational agility with the standardized agility test was 0.828, which was highly significant. It also revealed that the newly constructed recreational hand-eye coordination test had a significant correlation coefficient of 0.856 with the standardized hand eye coordination test. The table also indicated a good association for the newly constructed recreational upper body strength test and standardized upper body strength test, with a r value of 0.855. The newly constructed recreational abdominal strength test also showed a significant correlation with standardized abdominal strength having a value of 0.943. The table also showed that the newly constructed recreational speed test and standardized speed test had a significant correlation coefficient of 0.914. These findings support the well established criterion validity of recreational agility, hand-eye coordination, upper body strength, abdominal strength, and speed tests.

DISCUSSION AND CONCLUSION

Developing recreational physical fitness tests with high scientific authenticity requires a meticulous approach that balances theoretical foundations with empirical validation. Validity ensures that the tests accurately measure the intended fitness components.. The purpose of this study was to establish a criterion validity of a newly developed recreational physical fitness tests. The researcher constructed five test items to evaluate the agility, strength, endurance, coordination and speed. The test items were validated by the experts and also the results of constructed fitness tests were correlated with the standardized tests for validation. The high criterion validity of the various tests suggests that they are robust tools

for assessing various physical fitness components in recreational contexts. The ability of these tests to evaluate agility, strength, endurance, coordination and speed through a series of dynamic movements aligns well with accepted definitions and their designs mirror effective methodologies found in existing physical fitness tests. Thus, these tests are a valuable addition to recreational physical fitness assessments. In conclusion, standardized recreational physical fitness tests with high criterion validity are essential for assuring accurate and fair fitness assessments. They provide an important contribution to the field of recreational fitness and health promotion by boosting physical health, leading training methods, and supporting general well-being.

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AUTHOR CONTRIBUTIONS
Dr. Neelam K Sharma supervised and revised the manuscript. Sunil Singh wrote and edited the manuscript. Both the authors contributed to the article and approved the submitted version.

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