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Designing a Test to Evaluate Effective Defensive Skills Among Female Basketball Players

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ABSTRACT

This study aims to help coaches and researchers measure level of defensive performance among players. The researcher used a descriptive approach, test was administered to a sample of 20 junior players from Al-Taawon Sports Club, representing a single group, test included four main criteria: ability to block shots, ball possession, anticipation and response, and defensive positioning. A specific scoring system was used to classify performance into excellent, good, average, and weak defense. The test was designed to allow for an objective and scientific evaluation of players, enabling coaches to identify each player's strengths and weaknesses, thus contributing to systematic and organized improvement of defensive performance. Results showed that test is a practical and effective tool for developing players' defensive skills and motor abilities, enhancing their ability to participate effectively in matches and training. It can also be used to plan future training sessions according to individual needs of each player, contributing to raising overall level of team. The findings indicate that the majority of players fall into the "very good" and "good" performance categories, with the highest average score achieved in the areas of blocking and defensive positioning (4.0), while the area of anticipation and response had the lowest average score (3.8).

Keywords: Testing; Measurement; Test Designing; Defensive Skills; Basketball.

ABSTRAK

Studi ini bertujuan membantu pelatih dan peneliti mengukur tingkat performa pertahanan di antara para pemain. Peneliti menggunakan pendekatan deskriptif, tes dilakukan pada sampel 20 pemain junior dari Al-Taawon Sports Club, mewakili satu kelompok, tes mencakup empat kriteria utama: kemampuan memblokir tembakan, penguasaan bola,antisipasi dan respons, serta posisi bertahan. Sistem penilaian khusus digunakan untuk mengklasifikasikan performa menjadi pertahanan unggul, baik, rata-rata, dan lemah. Tes ini dirancang untuk memungkinkan evaluasi objektif dan ilmiah terhadap pemain, memungkinkan pelatih mengidentifikasi kekuatan dan kelemahan setiap pemain, sehingga berkontribusi pada peningkatan performa pertahanan secara

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sistematis dan terorganisir. Hasil menunjukkan bahwa tes adalah alat praktis dan efektif untuk mengembangkan keterampilan bertahan dan kemampuan motorik pemain, meningkatkan kemampuan mereka untuk berpartisipasi secara efektif dalam pertandingan dan latihan. Tes ini juga dapat digunakan untuk merencanakan sesi latihan di masa depan sesuai kebutuhan individu setiap pemain, sehingga berkontribusi pada peningkatan tingkat keseluruhan tim. Temuan menunjukkan bahwa mayoritas pemain masuk ke kategori performa "sangat baik" dan "baik", dengan skor rata-rata tertinggi dicapai di bidang blocking dan posisi bertahan (4,0), sementara area antisipasi dan respons memiliki skor rata-rata terendah (3,8).

Kata Kunci: Pengujian; Pengukuran; Desain Tes; Keterampilan Bertahan; Bola Basket.

INTRODUCTION

Sport is one of the most important human activities that effectively contributes to development of individuals' physical, intellectual, social, and psychological capabilities (Florence et al., 2026). It provides an opportunity to enhance physical fitness, develop basic and complex motor skills, and foster a spirit of cooperation, teamwork, and adherence to sporting rules and regulations, practicing sport helps develop self-discipline and self-control, and boosts self-confidence and ability to face challenges, making it a fundamental pillar in building a well-rounded personality, especially during early childhood and adolescence. Basketball, in particular, is a dynamic team sport (Patterson et al., 2025; Zhang et al., 2022). Basketball requires a seamless integration of players' physical, technical, and mental abilities. It relies on speed, agility, and physical strength, as well as ability to make quick and appropriate decisions during matches (Kokstejn et al., 2019; Kokstejn & Musalek, 2019; Nurharini et al., 2019).

Skills required in basketball vary between offensive and defensive, as good defensive performance is a key aspect that contributes to team's success and limits opposing team's scoring opportunities. Effective defense includes multiple skills such as blocking shots, ball retention, anticipation, and quick reaction (Cao et al., 2024; Vencúrik et al., 2021). Proper defensive positioning is a fundamental skill that needs to be developed and accurately measured. Despite significant attention basketball pays to developing defensive skills, there is a lack of scientific tools and practical tests that would enable coaches and researchers to objectively and accurately measure defensive level of female players (Erčulj et al., 2010; Nieto-Acevedo et al., 2026). Having a reliable measurement tool contributes to identifying strengths and weaknesses of players individually and collectively, providing a scientific basis for planning training programs and appropriate technical guidance for each player, thus raising overall level of team (Barfield et al., 2007; Ibáñez et al., 2019). Hence, this research came to present a practical test to evaluate effective defensive skills of female basketball players, as it is designed according to precise scientific principles and applied to a specific sample of players to determine its effectiveness, and thus provide a practical tool that helps in developing defensive performance and improving individual skills, which is reflected positively on overall performance of team during official matches and practical training (Hattem et al., 2020; Popowczak et al., 2026; Thajeel & Yousef, 2022).

It can be said that this type of study contributes to linking theory with practical application and enhances understanding of coaches and researchers of how to develop defensive abilities of players objectively. It also opens way for applying research results in developing training curricula and developing advanced defensive strategies based on accurate performance evaluation (Qarouach et al., 2024, 2025; Suárez-Iglesias et al., 2021). This research is a valuable addition to field of sports. It focuses on using scientific methods to evaluate performance rather than relying on personal observations or subjective assessments. This contributes to raising quality of training and maximizing use of players' abilities.

Defensive skills are among the most important elements that determine a team's effectiveness in basketball, as they depend on ability to block shots , retain possession of ball , anticipate, and react quickly. Correct defensive positioning is important , but coaches face difficulty in objectively and accurately assessing level of these skills in players due to a lack of practical scientific tools that enable them to measure defensive performance scientifically. This deficiency leads to an inability to accurately identify strengths and weaknesses of each player, which affects effectiveness of training planning and development of individual and team performance. need arose to design a practical test to assess effective defensive skills of female basketball players. It is able to provide accurate and reliable data that helps coaches and researchers to improve defensive performance and develop motor skills and individual abilities of female players in a systematic and objective manner.

Research objectives to Designing a practical test to assess effective defensive skills among female basketball players. Determining level of defensive performance of players and identifying their strengths and weaknesses in order to develop their defensive performance better.

METHODS

The researcher used descriptive survey method because it is suitable for nature of research problem and study sample, as this method allows for accurate and systematic collection of data about players' performance and defensive skills. And analyzing it descriptively to determine level of defensive capabilities and strengths and weaknesses in order to serve research objectives of evaluating athletic performance in an objective and reliable manner, sample consisted of (20) junior female players from Al-Taawon Club, and they were chosen intentionally due to their suitability for study requirements and their ability to perform prescribed tests. This sample represents target group on which effective defense skills assessment test will be applied, which allows researcher to collect accurate and reliable data on level of defense skills among players, and thus analyze results in a way that serves research objectives.

Research Performance Design

To confirm validity and importance of research tool practical test was presented to a group of experts and specialists in field of sports testing, measurement and training . content of test and four criteria used (preventing shots, ball possession, anticipation and response, and defensive positioning) were reviewed, in addition to evaluation and scoring system, experts provided their comments and suggestions with aim of improving accuracy of test and ensuring its objectivity and reliability. This also helped in modifying some elements of test to ensure its suitability for study sample and target

category of female players, which increased credibility of tool and its ability to measure defensive performance scientifically and objectively .

Tool was designed to assess effective defensive skills of female basketball players using a practical test consisting of four main criteria, on a sample of 20 junior players from Al-Taawon Sports Club, representing one group: Ability to block shots : Each player's ability to block shots from opposing team was assessed, with performance recorded on a scale of 1 to 5. Ball possession (Stealing/Rebound): extent to which each player was able to control ball during virtual matches or specific training sessions was observed, and performance was rated according to same scoring system. Anticipation and Response: players' ability to anticipate opponent's movements and respond quickly and accurately was measured, and each player's score was recorded according to specified criteria. Defensive Positioning: positioning of each player during defense was assessed to ensure correct spaces were covered, with scores recorded for each criterion. After collecting data, final performance of each player was classified into following levels:

1. 18–20 points: Excellent defense
2. 14–17 points: Good defense
3. 10–13 points: Average defense
4. 0–9 points: Weak defense

Scientific Foundations of Test

Validity: validity of test content was confirmed by presenting it to 7 experts in field of sports testing, measurement and training to assess suitability of four criteria (preventing shots, ball possession, anticipation and response, defensive positioning) and their ability to measure what test was designed to measure. This ensures that each item accurately measures a specific skill and reflects actual performance of players.

Reliability: test was designed to be stable upon reapplication. The researcher used a clear scoring system of (1, 3, 5) for each criterion, ensuring consistency of results among evaluators and when test is repeated on same sample or similar samples.

Objectivity of test: Precise criteria were set for each skill with a specific scoring system, so that influence of personal judgment in evaluation is reduced. This ensures that results depend on actual performance of players and not on assessment of researcher or supervisors, and enhances credibility of test as a practical scientific tool.

Pilot study

Before proceeding with actual application of test, the researcher conducted a pilot test on Saturday, January 13, 2024, on a sample of (3) junior female players from outside main research sample, in order to ensure clarity of test instructions. And ease of practical application suitability of adopted registration and grading system, as well as accurate determination of time required to perform test , and results of pilot study contributed to making some minor adjustments to a number of items, in order to ensure accuracy of tool and its suitability for application to the main sample and to achieve research objectives in a scientific and organized manner .

Test application

The test was administered to entire study sample, according to following steps: Stand in a defensive ready position at starting point. Performing defensive tasks assigned to simulate real-life game situations includes: blocking shots, gaining possession of ball, anticipating and responding, and defensive positioning. Recording

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performance of each player using a scoring system (5 excellent, 3 good, 1 poor). Calculate total score for each player and rank them according to following levels :

1. 18–20: Excellent defense
2. 14–17: Good defense
3. 10–13: Average defense
4. 0–9: Weak defense

Statistical methods

The researcher used the SPSS statistical package to extract and analyze results.

RESEARCH RESULTS

Presenting results, their standard description for each player, and their ranking

Table 1. Descriptive standard results for each player are shown in defensive variables, their sum, and their classification

No.	Block	Ball Possession	Anticipation and Response	Defensive positioning	Total	Performance classification
1	5	5	5	5	20	Excellent
2	4	4	4	5	17	Good
3	5	5	4	5	19	Excellent
4	2	3	1	3	9	Weak
5	4	3	4	4	15	Good
6	5	4	5	5	19	Excellent
7	3	3	2	3	11	Middle
8	4	4	4	4	16	Good
9	5	5	5	5	20	Excellent
10	3	2	3	3	11	Middle
11	4	4	4	5	17	Good
12	1	2	3	3	9	Weak
13	5	5	5	5	20	Excellent
14	4	3	4	4	15	Good
15	4	4	4	4	16	Good
16	5	5	5	5	20	Excellent
17	4	4	4	5	17	Good
18	4	4	4	4	16	Good
19	5	5	5	5	20	Excellent
20	3	3	2	3	11	Middle

Table 2. Descriptive analysis of each criterion shows.

Standard	Average	Min.	Max.
Block	4.0	1	5
Ball possession	3.9	2	5
Anticipation and Response	3.8	1	5
Defensive positioning	4.0	3	5

Table 3. Overall team performance rating shows

Percentage	Number of players	Performance level
35%	7	Excellent
35%	7	Good

15%	3	Middle
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Table 4. Distribution of players is shown according to individual criteria for each player.

Standard	Excellent (5)	Good (4)	Average (3)	Weak (≤ 9)
Block	8	7	3	2
Ball possession	7	8	3	2
Anticipation and Response	7	7	2	4
Defensive positioning	9	7	2	2

DISCUSSION

Statistical table shows results of effective defensive skills test for female basketball players. There was a clear disparity in performance levels among players. A group with excellent performance and another with good performance emerged, while some players needed to improve their defensive skills. The researcher attributes these results to importance of using practical evaluation tools and specific criteria to measure defensive performance instead of relying on self-assessment or traditional observation only, as this helps in accurately identifying strengths and weaknesses, and planning targeted training programs to enhance performance , as confirmed by (RoleCatcher , 2024).

Accurate athletic assessment provides valuable insights for coaches into technical and physical abilities of players. This enables them to make training decisions based on objective data, not just impressions. Scientific studies support this approach, as designing tests related to context of game and defensive skills contributes to providing objective measurements of players' skills. This is what Hassan & Ubaid (2021, p. 443) pointed out and confirmed, stating that "Carefully designed tests are capable of estimating level of complex defensive performance and accurately reflect player's level compared to scientific standards." This also aligns with Smith et al. (2020) , who emphasized that "Reliability and validity of sports performance measures are crucial factors in ensuring quality and reliability of assessments, as reliance on stable and reproducible measurement tools leads to trustworthy results when comparing performance between individuals or over time. (Smith et al. 2020)

Variation in scores among female players, particularly in certain criteria such as anticipation and response, highlights need for specialized training programs aimed at improving decision-making speed and spatial awareness in defensive situations, a point further emphasized by Tanay(2023, p. 33). Scientific research is an essential tool Linking assessments to data-driven future training plans, defensive positioning also gains significant value in basketball competitions. Given its role in transforming individual strength into effective collective defense that prevents opponent from scoring easily, the researcher believes that results obtained from defensive skills test not only demonstrate players' performance level. Rather, it provides a scientific basis for future training interventions, which contributes to raising level of team as a whole and preparing players who are more capable of facing tactical challenges in competitions. (Tanay, 2023).

CONCLUSIONS AND RECOMMENDATIONS

The effective defensive skills test proved its ability to objectively and accurately assess defensive level of players. By showing clear differences between performance levels (Excellent, Good, Average, Poor), it confirms its validity as a practical scientific tool in training field. Results revealed a disparity in some defensive skills. Especially in anticipation and response, which indicates need for focused training programs aimed at developing speed of decision-making and defensive awareness among players of average and weak level, with goal of raising overall level of team.

The researcher recommends adopting designed test as a periodic assessment tool within training program due to its objectivity and accuracy in measuring effective defense skills. With possibility of using it to track development of players' levels over different time periods. It recommends developing specialized training programs that focus on developing skills in anticipation, response, and defensive awareness. Especially for players of average and weak level.

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