

Passing and shooting accuracy in handball among Makassar city athletes

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Abstract. This study discusses passing and shooting, two key skills that determine the effectiveness of attacks and goal-scoring opportunities in handball. This study aims to (1) map the level of passing and shooting accuracy in handball athletes in Makassar City, (2) compare the accuracy profiles of both. The research method used is descriptive quantitative with 20 active athletes as a sample. Measurements using the Passing Accuracy Test and Shooting Accuracy Test refer to the IHF coaching guidelines and the "Teaching Handball" (IHF) textbook which contains standard dimensions, targets, and drill organization. The results show an average passing accuracy of 78.5% (good category) and shooting 69.2% (sufficient category). This pattern is consistent with the performance analysis literature which reports that winning teams generally have higher shooting efficiency and that shooting requires a more complex integration of biomechanical, tactical, and decision-making demands under pressure than passing. Practical recommendations include progressing pressure shooting training, varying shooting angles/positions, specific reinforcement, and integrating simple analytics (shot charts and pass maps) for daily feedback.

1 Introduction

Handball is a team sport that demands coordination, speed, and effectiveness in controlling the ball to score goals. Two fundamental skills that determine the quality of play are passing and shooting. Accurate passing facilitates ball circulation and creates space for attack, while precise and efficient shooting is a key factor in converting opportunities into goals [1].

However, in the context of sports development in Indonesia, including Makassar City, systematic and data-driven evaluation of basic skills such as passing and shooting accuracy is rarely conducted. Objective analysis is crucial for coaches to develop more measurable training programs. Previous research [2, 3] confirmed that teams with high passing and shooting efficiency have a greater chance of winning. Therefore, this study focuses on mapping the passing and shooting accuracy of handball athletes in Makassar City.

Modern handball requires the integration of technical skills, physical capacity, tactical intelligence, and psychological stability. In technical play, passing and shooting are inseparable components as they form part of the attack chain: passing maintains or secures

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possession and creates numerical and positional advantage, while shooting decides the final outcome (goals) in a game. Analysis of world-class tournaments shows that shot efficiency is strongly associated with victory [4, 5]. Stability in handball through passing accuracy also contributes to low turnovers and the ability to create quality chances.

Real-life match conditions place shooters under significant temporal and spatial pressure. Experts emphasize that shooting is a "multi-constraint task": the biomechanics of the throw, the perception of the action, and tactical decisions converge within a narrow time window [1]. The intermittent, explosive match load profile impacts the stability of shooting accuracy, particularly in the final quarter. Furthermore, effective passing, in addition to maintaining possession, plays a tactical role in opening defensive gaps, particularly against defence.

In the context of coaching in Indonesia, including Makassar City, an evaluation of preparations for the upcoming event, the Pre-Qualification for the 2025 Provincial Sports Week (PEK). Objective evaluation of basic skills is often poorly documented. Yet, mapping passing and shooting accuracy is crucial for designing training that better aligns with established targets. This study attempts to fill this gap by presenting a quantitative overview of the accuracy of both skills while synthesizing practice recommendations from the international literature.

2 Research Methods

This study uses a quantitative descriptive design with a population of active handball athletes in Makassar City. The sample consisted of 20 athletes (10 male and 10 female) who are members of regionally fostered clubs. The research instruments are Passing Accuracy Test: Athletes are asked to make 20 passes to a 1×1 meter target board from a distance of 7 meters. Accuracy is assessed by the number of balls that hit the target. Shooting Accuracy Test: Athletes make 15 shots at the goal with specific sector targets (top right, top left, bottom right, bottom left). Success is calculated from the ball that is on target. These two instruments are adapted from the Teaching Handball textbook published by International Handball Federation [6] and research by Hermassi et al. [7]. And data analysis in this study is Data was analyzed descriptively quantitatively using percentages and categories of accuracy levels. Interpretation of results refers to the classification standards: Very good ($\geq 85\%$), Good (70–84%), Sufficient (55–69%), Less ($< 55\%$).

3 Results and Discussion

The average passing accuracy was 78.5%, which is considered good. Most athletes were able to maintain consistent passing even under moderate pressure. Shooting accuracy averaged 68.2%, which is considered fair. Shooting performance tended to fluctuate, especially when aimed at the top corner of the goal.

These results align with a study by Meletakos et al. [8], which found that passing efficiency was higher than shooting in most amateur teams. Shooting is more complex because it requires biomechanical coordination, speed of execution, and tactical decision-making under pressure. Comparison of Passing and Shooting Data shows a gap between passing and shooting. Passing is relatively more mastered because it is more frequently performed in training and matches. Shooting, on the other hand, requires a combination of strength, coordination, and complex decision-making, resulting in a lower success rate.

According to Thorpe and Bunker [9], accurate passing is a key foundation in handball because it determines the rhythm and tempo of the attack. The results of this study, which categorize passing as good, align with the findings of Afonso et al. [10], which found that a neat passing pattern increases the probability of creating quality shooting opportunities. Good

passing is the foundation of an effective attack. With high accuracy, a team is able to maintain the rhythm of the game, reduce errors, and create more quality shooting opportunities. Conversely, inaccurate shooting can reduce team efficiency, even if passing is good.

Shooting is the skill that most determines the final score. Wagner et al. [1] emphasized that shooting efficiency is directly correlated with a team's chances of winning. The average shooting accuracy of Makassar athletes, which was only 71.5%, indicates that this aspect remains a weakness. Contributing factors include:

- a. Biomechanical techniques: foot position, arm swing, and body coordination.
- b. Physical condition: shoulder, arm, and core muscle strength.
- c. Tactical: the ability to read the opposing goalkeeper's movements.
- d. Psychological: situational pressure and composure when executing shots.

To improve shooting, several practical recommendations can be implemented, including:

- a. Pressure shooting training by creating physical and mental pressure similar to match conditions.
- b. Varying shooting angles from various positions (wing, pivot, and backcourt).
- c. Strengthening specific physical conditions such as leg muscle explosiveness and shoulder strength.
- d. Performance analysis using shot charts to provide visual feedback to athletes.
- e. With data-driven training strategies, coaches can develop more effective programs to increase the conversion of chances into goals.

Expert Opinions: According to Saavedra et al. [11], shooting success is determined not only by individual technique but also by tactical context, such as distance from the goal and pressure from the opponent. Hermassi et al. [12] emphasize the importance of specific upper-body strength and power training to improve shooting accuracy. Meanwhile, Bilge [4] revealed that winning teams in top European leagues have a shooting accuracy of at least 75%, so the figure of 71.5% is still below international standards.

Based on research results and literature synthesis, several relevant training strategies for coaches in Makassar include: **Progressive Pressure Shooting:** shooting practice with gradual increases in pressure, whether from distance, angle, or the presence of defenders. **Angle and Position Variation:** shooting practice from various positions (wing, center, pivot) to train adaptation. **Field Data Analysis:** using a simple shot chart to map each athlete's shooting success/failure patterns. **Specific Physical Condition:** shoulder strength, core stability, and explosive power programs to support shooting technique stability. **Match Simulation:** puts athletes in game-like situations to get used to making decisions under pressure.

4 Conclusion

This study shows that the passing accuracy of Makassar handball athletes is classified as good (78.5%), while shooting is classified as fair (68.2%). Passing is relatively more stable because it dominates the game, while shooting is more complex because it requires the integration of technical, physical, tactical, and psychological aspects. Therefore, coaches are advised to allocate a greater portion of structured shooting training, using a variety of angles and pressures, as well as simple analytical support for feedback. This study also emphasizes the importance of quantitative documentation in regional sports development in Indonesia to ensure more evidence-based training programs. It is recommended that coaches allocate a greater portion of training to shooting with a variety of conditions and pressures, and utilize performance analysis to monitor the development of athlete accuracy.

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