

THROWING AND CATCHING TRAINING MODEL FOR SOFTBALL ATHLETES AGED 16 - 19 YEARS: Systematic Review

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ABSTRACT

This study aims to analyze the model of throwing and responding training in softball for athletes aged 16-19 years through a systematic review. Article searches were conducted using electronic databases derived from Scopus published from 2019 to 2024 using the keywords throwing, catching, biomechanics, kinetic, and softball. The inclusion criteria in this literature review resulted in 15 selected articles resulting from a screening process of 104 articles. The results presented in this literature review reveal the fact that there are several results of throwing and catching exercises in softball. from the results of the exercise show an increase in terms of accuracy and speed of throwing, and in catching there is accuracy in catching the ball. However, the sample research tends to senior athletes. therefore this systematic review helps the author to find problems that will be researched in the future.

Keywords: throwing, catching, softball

1. INTRODUCTION

Softball is a sport that requires players to have good physical, technical, psychological, tactical and health conditions. These five elements must be owned to obtain maximum achievement in the sport of softball itself. Physical condition can be interpreted as the state of the athlete's body to carry out physical activity. Technique can be interpreted as a special way in a softball game to carry out basic movements. Psychology can be interpreted as the state of the player to control his own emotions. Tactics are the strategies and skills of players to get the goals set by the team and health, namely the balance between body nutrition, team anatomy relationships and rest. One of the five components above is basic technique. The basic techniques required in softball are Throwing, Catching, Batting, Bunting, Baserunning and Sliding (Aqobah et al., 2021).

From the results of interviews with several coaches and practitioners as well as softball athletes, it was found that throwing and catching exercises tend to be boring so that novice athletes are bored, because there is no variety of training (Aswathy, 2018). In addition, the limited reference to throwing and catching training models for novice athletes is an obstacle for a coach to provide the right and varied training models so that they can participate in training sessions with enthusiasm and fun to achieve the goals of training (Ali et al., 2020). Training with a certain frequency, intensity, time and type can improve the optimal ability of athletes when made in a structured manner in accordance with the expected goals in accordance with the target training program (Bompa & Buzzichelli, 2019). The variety of throws and catches is very dependent on the situation of the ball hit by the batter. But in the field it is still seen that there are only a few variations that are trained. Practice helps improve the player's ability, but to achieve good skills, you should do a lot of practice so that players get used to doing a technique in any condition, considering that in a match there will be many unexpected things (Aqobah et al., 2023).

In a match there are many situations and events that make defense players perform techniques that are not usually done, for example for throws, on certain occasions

the guard is required to be able to throw the ball well in all circumstances or positions (Greiner et al., 2022). A player does not always make a top throw as in training but not infrequently side throws and bottom throws must be made by the guard. This means that mastering all throwing techniques is important. All players must be able to throw well and accurately. And when catching the ball, sometimes the ball bounces without a clear direction, then the defense player must swiftly position to catch the ball to throw it to the base in order to out the runner scoring points or save on base (Program., 2007). Novice athletes in this study have a strategic role in producing outstanding athletes in softball sports. In this study novice athletes were used as research subjects whose throwing and catching movements were measured from throwing and catching techniques. For indicators of throwing top throws, side throws and bottom throws. And for catching techniques, the indicators of catching techniques are catching straight balls, ground ball, and catching techniques for flyball (Hodges, 2022).

Based on problems, analysis and field observations, the need for a throwing and catching training model for novice athletes in softball sports helps increase understanding and techniques of softball games in the defense position of coaches, athletes and parents of athletes. So the author intends to examine articles in scopus journals to make reference material in the development of throwing and catching training models in softball.

2. RESEARCH METODOLOGY

This research uses a descriptive quantitative method with a bibliometrics approach. According to (Bores-García et al., 2021) bibliometrics is a mathematical and statistical method used to study and identify patterns of material use and analyze the development of a specific literature, especially for authorship, publication and use. When bibliometrics is used to study a scientific journal, a description of the journal such as journal quality, journal maturity, journal productivity and so on will be obtain Rajšp & Fister (2020). The research data used in this study are journals or scientific articles with a range of years 2020-2025 sourced from the Scopus database. The search for scientific articles was carried out using the Publish or Perish application with the keyword in the article title, category, abstract, keywords. The development map of the Softball scientific publication model was analyzed using the VOSViewer application.

3. RESULTS AND DISCUSSION

The main focus of this systematic review is the effect of taking on softball throwing and catching techniques. From the search results using the Publish or Perish application, from 2020 to 2025 with the maximum number of searches used, namely 200 articles, there are 42 article publications in accordance with the keywords entered, then with the filtering type using articles there are 15 papers written in the form of articles.

In addition, we attempted in this systematic review to collect available scientific evidence in online databases according to inclusion and exclusion criteria based on PICOS (Johnson, 2019) The eligibility criteria are:

In addition, we endeavored in this systematic review to collect scientific evidence available in online databases according to the inclusion and exclusion criteria based on PICOS (Page et al., 2021). The eligibility criteria were:

1. Population: regular, active individuals, individuals, and athletes
2. Intervention: softball, throwing and catching
3. Comparison: equal conditions with placebo or control group
4. Outcome: basic catching and throwing techniques
5. Study Type: parallel or parallel randomized-blinded and randomized design.

Exclusion criteria were articles that were not available in English or articles that did not have full-text publications such as only the title and abstract. In this literature review, a comprehensive and systematic search was conducted for journals published between 2020 until 2025 through the online database Scopus. The following search terms were used in the database: throwing, catching and softball. Through the search process, several relevant articles were obtained from the online database. Cross-referencing tests were performed on titles and abstracts to avoid duplication.

Table 1. Article Summary

Tahun	Nama Penulis dan <i>Publisher</i>	Judul
2023	Athanasakis, Petros Panoutsakopoulos, Vassilios Sfingos, Nikolaos Kollias, Iraklis A.	Offensive game-related indicators that differentiate winning and losing teams and their contribution to scoring a run in Olympic Softball
2023	Sudaryanti, Prayitno	Model Latihan Bermain Outdoor Lempar Tangkap Bola untuk Mengembangkan Motorik Kasar Anak Usia 5-6 Tahun
2022	Razak RHussain RKassim N	The relationship between trunk rotation strength and throwing ball velocity among female collegiate softball players
2022	Erik Vian Rauhe, Jes Jemmy Mangindaan, F.R. Supit	Pengaruh Latihan Power Lengan Terhadap Kemampuan Melempar Dalam Permainan Softball Pada Mahasiswa Jurusan PKL FIK UNIMA
2021	Friesen KBarfield JMurrah W	The Association of Upper-Body Kinematics and Earned Run Average of National Collegiate Athletic Association Division I Softball Pitchers
2021	Eva Faridah, Rubiyatno, Syahril Adam, Mikkey Anggara Suganda	Softball Catching Learning Model Development for High School Students
2020	Agus Arief Rahmat, Aang Rohyana	Pengembangan Prototipe AlatBantu Latihan Reaksi Yang Menggunakan Sinyal Lampu Dan Bunyi Terhadap Kecepatan Lemparan Atas Softball
2020	Okta Diana Pramono, Mury Kuswari, Prita Dhyani Swamilaksita, Mertien Sa'pang, Nazhif Gifari5, Rachmanida Nuzrina	Faktor VO2maxAtlet Softball Putri di Pemusatan Latihan Nasional(Pelatnas) Asian Games 2018
2020	Innandya Asyifa Rahmaniari, Pipit Pitrian	Hubungan Latihan Fisik dan Status Gizi terhadap Kolesterol Total Darah pada Atlet Softball Putra

4. CONCLUSION

In the sport of softball, throwing and catching the ball are two fundamental skills that are critical to a player's technical development. Both serve as the foundation in defense and attack strategies. The following is a discussion of the literature review related to throwing and catching the ball in softball sports

Throws in softball have several variations, but the most common are overhand throws and underhand throws, with the latter being more dominant in softball games. Several studies have shown that underhand throws can produce better velocity and control, as well as allow pitchers to more easily manage the spin of the ball, such as a curveball or riseball.

According to research conducted by (Johnson, 2019) effective throwing techniques require good coordination between lower and upper body muscles, and focus on hand and wrist position. Pitchers must be able to maintain ball speed while maintaining throwing accuracy to avoid fouling. In many cases, a good throw can be the key to shutting down an opponent's offense.

Catching in softball, be it with a glove or bare hand, requires proper technique to reduce errors and increase effectiveness on the field. For example, a glove catch is made by facing the ball, keeping the glove open and moving in a smooth motion to ensure the ball goes in safely.

As revealed in research by (Miller & Miller III, 2017) poor catches are often caused by a lack of concentration or incorrect body position. Good technique involves understanding the direction the ball is coming from and proper hand placement. In addition, players must also have agility and sharp reflexes to respond to balls coming at high speed or with unexpected trajectories. Throwing and catching skills in softball rely not only on physical strength, but also coordination and fine motor skills (Strickland et al., 2019). According to (Williamson et al., 2014) successful softball players have excellent hand-eye coordination skills, as well as fast reaction speed. They must also have the mental resilience to stay focused in high-pressure situations, such as when the game is nearing the end or when facing a difficult-to-catch throw.

Other research shows that good throwing and catching techniques can be learned and improved through structured practice and repetition. An effective training program will incorporate both physical and mental aspects and provide challenging exercises to improve players' endurance, flexibility and reaction speed (Feeley et al., 2018). Throwing and catching in softball is also closely related to a team's defensive strategy. Success in defense depends not only on individual skills, but also on communication and collaboration between players. For example, catchers and pitchers must have a good understanding of throwing patterns and signs used for indirect communication. Likewise, infielders and outfielders must work together to predict and respond to incoming balls (Arabi & Nazemzadegan, 2021).

According to (Miranti & Rahayu, 2019) solid defense on the field, including good catching ability, greatly affects the team's chances of winning the game. A team that has good throwing and catching skills can significantly reduce the opponent's chances of scoring. It is important to note that throwing and catching skills in softball, as in other sports, require consistent repetition and practice. Research by (Smith et al., 2017) shows that practice focused on basic techniques, such as throwing and catching, serves to improve movement mechanics, increase speed, as well as reduce the likelihood of injury.

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