



Physical Attributes, Squat Ability, and Long Jump Performance of Maguindanaon Junior High School Athletes

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Abstract: This study explores how key physical attributes, including height, weight, arm length, and leg length, impact on athlete squat ability and ultimately, their long jump performance. This study was utilized a mixed method approach, combining a survey questionnaire to gather quantitative data on physical attributes, squat ability, and long jump performance. It was followed by semi-structured interviews to delve deeper into athletes' qualitative experiences and perceptions regarding their training and performance. The data was gathered using a validated research-made questionnaire. Mean, standard deviation (sd), correlation coefficient (r), and p-value were the statistical tools used to determine the relationship between physical attributes, squat ability, and long jump performance and thematic analysis, frequency count, and qualitative analysis to identify common patterns and insights regarding athletes' backgrounds. The analyzed and interpreted data revealed that participants' height, weight, and arm length show a significant moderate association. Hence, multiple regressions show that weight best predicts long jump performance. Participants' level of squat ability showed a significant and very strong association with long jump performance. Most participants had experience in training, competition, technical skills support, and the environment. Thus, it resulted in a moderate level of long jump performance. It is concluded that among the physical attributes, weight is the best predictor of long jump performance; squat ability had a significant and very strong association with long jump performance, and athletes with training and competition experience, good athletics skills, and strong support have a strong significant effect on long jump performance.

Keywords: Athletes, Physical Attributes, Physical Education, Squat Ability, Long Jump, Public School Students.

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Introduction

Long jump is a fundamental track and field event that requires a complex interplay of speed, strength, technique, and coordination. Athletes must generate maximum horizontal velocity during the approach, efficiently transfer energy during takeoff, control their body in the flight phase, and execute an effective landing to maximize their jump distance. Long jump performance may influenced by various physical attributes, strength levels, and power output. The study aims to investigate the relationship between physical attributes, squat ability, and long jump performance to determine which factors contribute most significantly to an athlete's jumping capacity. Understanding this relationship can help coaches, design targeted training programs to

improve long jump performance through strength training and biomechanical optimization.

Various researches indicate that physical attributes play a significant role in the performance of long jump athletes from multiple countries, including the USA, China, and Japan, due to differences in training techniques and biomechanical factors. Studies examining athletes from these nations have found that muscle size correlates with long jump distance, particularly in the trunk and gluteus maximus. For instance, in the USA, where access to advanced sports science technology is more widespread, athletes undergo extensive biomechanical assessments to refine their jumping techniques, Lees et al. (2015). British long jumpers, particularly those training in London, also benefit from similar resources, often working closely with sports scientists to optimize

their form. In a related study by Funken et al. (2017), researchers in Japan examined differences in jumping mechanics between Olympic and Paralympic athletes, revealing that both groups rely heavily on biomechanical adjustments tailored to their physical capabilities. It includes managing mechanical loads and utilizing different motor strategies to optimize performance. These adaptations are critical for athletes with lower extremity amputations, who may require alternative methods to reach comparable jump distances to able-bodied athletes. Another study by Ikeda et al. (2017) analyzed the height and limbs of Japanese Olympians to identify sport-specific morphological characteristics. It developed age-specific evaluation standards for junior athletes. While it doesn't focus exclusively on long jump performance, it provides insights into how height and limb length can influence athletic events.

Meanwhile, in the Philippines, several studies have explored how physical attributes like strength, endurance, and coordination influence long jump performance, often assessing the effectiveness of training programs like plyometrics. A survey by Diosalan et al. (2024) demonstrated that plyometric training significantly improved the long jump performance of students, specifically targeting attributes like explosive strength and coordination. This study revealed that students who underwent plyometric training had greater post-treatment improvements than those who followed a traditional fitness program, underlining the value of tailored training to maximize performance based on physical attributes. The same with the study by Valdez et al. (2015) on *physical fitness attributes and their relationship with long jump performance among Filipino athletes*. This study explores Filipino athletes' physical fitness attributes (e.g., strength, power, flexibility) and how they contribute to long jump performance.

Therefore, studying the physical attributes, squat ability, and long jump performance among male and female athletes at Datu Mantato National High School is vital for enhancing athletic long jump performance. This research can provide evidence-based insights into the relationship between physical attributes, squat ability, and long jump performance. Furthermore, understanding the factors influencing long jump performance is essential for coaches and athletes to develop targeted training strategies, and these effects in a school setting can promote physical fitness and athletic development among youth, fostering a culture of sports participation and excellence in the community.

Statement of the Problem

The study determined the relationship between physical attributes, squat ability, and the long jump performance of Maguindanaon junior high school students. It answered the following questions:

1. What are the physical attributes of junior high school Maguindanaon students in terms of:
 - 1.1 height;
 - 1.2 weight;
 - 1.3 arm length; and
 - 1.4 leg length?
2. What is the level of squat ability of Maguindanaon junior high school students in terms of:
 - 2.1 depth of squat;
 - 2.2 knee alignment;
 - 2.3 back position;
 - 2.4 foot position and stability;
 - 2.5 hip and knee drive;
 - 2.6 core engagement;
 - 2.7 movement smoothness, and
 - 2.8 breathing pattern?
3. What is the level of long jump performance of junior high school Maguindanaon students in terms of:
 - 2.1 jump distance;
 - 2.2 take-off technique;
 - 2.3 flight phase;
 - 2.4 landing technique;
 - 2.5 approach speed;
 - 2.6 technique and form, and
 - 2.7 reaction time?
4. Are the physical attributes significantly associated with long jump performance?
5. Are the levels of squat ability significantly related to long jump performance?
6. What are the other attributes of Maguindanaon junior high school students performing the long jump?

Literature Review

Physical Attributes

Physical attributes are essential for achieving optimal long jump performance. Azuma et al. (2021) investigated the relationship between physical characteristics (stature, body mass, body fat percentage, lean body mass, and fat mass) and jump distance in the long jump among male college students. They found that 50-meter run time (indicating sprint ability) was the most significant factor influencing jump distance, followed by body mass and fat percentage. In addition, a study by Nicolò et al. (2020) investigated physical attributes such as strength, speed, and flexibility and how they correlate with long jump performance in athletes, specifically focusing on younger participants. However, key physical attributes such as leg strength, flexibility, and explosive power are significant predictors of long jump performance in adolescent athletes, Makaruk et al. (2021). These attributes directly correlate with improved long-jump distances when developed through targeted training. In conclusion, physical attributes, including body Height and limb length, Weight, Body Composition, Strength and Power, Flexibility, Speed/Quickness, Balance, and coordination, influence long jump performance.

Height

Height and Long Jump Performance: Height has been identified as an important factor in long jump performance due to its impact on reaches and leverage during takeoff. Research from Pavlović et al.

(2022) analyzed 21 top male long jumpers and found that body height did not significantly affect long jump performance, while body weight showed a significant inverse relationship with jump distance. Another relevant study by Bakti et al. (2024) focuses on sprinting. It examines the relationship between leg length, jump height, and leg muscle explosive power pertinent to long jump performance. Additionally, a study by Ljubičić et al. (2017) highlights significant differences in body height, weight, BMI, and age between male and female finalists, suggesting that these anthropometric characteristics may influence long jump performance. It indicates that height and limb length significantly impact long jump performance. Taller athletes generally benefit from a greater center of mass and limb length, which can contribute to longer distances in long jumps. Limb length, particularly leg length, is crucial for producing effective force during the takeoff phase.

Weight

Body weight affects approach speed, which is critical for maximizing jump distance. Research from Pavlović et al. (2022) investigated the influence of body weight on long jump performance. The study included 21 top male long jumpers and found a significant inverse relationship between body weight and long jump results, indicating that higher body weight negatively affects performance. However the study of Pranata (2019) concluded that increased body weight negatively impacted jump distance, emphasizing the importance of managing weight for optimal performance in jumping events. Additionally, a study by Rao et al. (2016) explored the relationship between body weight and long jump performance. The study concluded that body weight, along with speed and agility, can serve as a predictor of long jump performance in male athletes. Body weight, particularly body composition, significantly determines long jump performance. Lower body fat percentages, favorable weight-to-strength ratios, and lean muscle mass can contribute positively to long jump outcomes, while excessive weight may hinder approach speed and takeoff force.

Arm length

According to Reddy et al. (2020), they examined various anthropometric variables, including upper arm length and forearm length, about long jump performance. The researchers selected ten male long jumpers and analyzed anthropometric and kinematic variables to determine their impact on performance. However, the study found no significant correlation between the measured angular kinematical variables and the athletes' long jump performance. Another research from Kaur Tiwana (2018) he found that anthropometric measurements, including lower arm length, calf girth, and thigh girth, significantly predict long jump performance. Additionally, Huiyu Zhou et al. (2020) discussed the role of arm motion in enhancing standing long jump performance. The review highlighted that effective arm activity can improve jump performance by contributing to optimal motor coordination between upper and lower body segments. It indicates that arm length significantly affects long jump performance.

Leg length

Nikolaidis et al. (2016) examined the relationship between leg length and long jump performance. The researchers found that both takeoff and landing distances are strongly affected by leg length,

with individuals possessing longer legs achieving greater distances. They concluded that leg length is a significant factor influencing long jump performance. Another study by Suyono et al. (2023) examined the relationship between leg length and long jump performance. The researchers found that leg length significantly contributed to squat-style long jump performance, with an effective contribution of 38%. The longer leg length may positively influence long jump outcomes. Additionally, a study examined the relationship between leg bone length and sprint performance. While this study focused on sprinting, its findings may be relevant to long jump performance, as both activities rely on similar biomechanical principles Tomita et al. (2020). In summary, athletes with long limb lengths can contribute to longer distances in the long jump, and limb length, particularly leg length, is crucial for producing effective force during the takeoff phase.

Squat ability

Squat ability in the long jump refers to the athlete's capacity to generate power and force from their lower body, particularly the legs, and hips, during the squat jump and its transfer to the long jump take-off. Kadir et al. (2021) investigated the impact of squat training on long jump ability, utilizing a one-group pre-test and post-test design. The study concluded that squat training positively affects long jump performance, highlighting the importance of developing lower body strength in this athletic discipline. Murr et al. (2022), this research analyzes the correlation between relative squat strength and jump performance, finding that greater squat strength is associated with improved jumping ability. A study by Sari et al. (2021) concludes that squat exercises in pairs positively affect long jump performance in athletic sports. These studies indicate that squat strength and training intensity can significantly influence jump performance, a critical component of long jump success. In conclusion, proper squatting during takeoff has dramatically improved long jump performance.

Depth of Squat

Proper squat depth is essential for maximizing strength gains. The researcher will use stick measurement to measure the squat's depth. According to the study of Farrell et al. (2016) they examined the correlation between varying back squat depths and vertical jump performance in high school football players, suggesting that deeper squat depths may correlate with improved vertical jump performance. However, Endab (2019) found that both squat jump (half) and countermovement jump exercises significantly enhanced vertical jump performance, highlighting the potential benefits of squat exercises in jump training. In an additional study by Marques et al. (2021), the authors investigated the impact of different squat depths on the performance of the long jump. Their research provides insights into how altering squat depth can influence an athlete's jumping power and technique, potentially offering guidelines for strength training programs tailored to enhance long jump performance. This study suggests that exercises targeting ankle dorsiflexion, hip flexion, and dorsiflexor strength can help improve squat performance.

Knee Alignment

Grooten (2019) examined the effects of verbal knee alignment instructions on knee kinematics and the performance of a single-leg jump in female adolescent soccer players. He found that verbal instructions accentuating proper knee alignment benefited knee

kinematics but not jump performance. It suggests that knee alignment instructions can improve landing mechanics but may not directly translate to enhanced jump performance. Therefore, while the provided search results do not directly address the relationship between knee alignment and long jump performance, the authors mentioned above offer valuable insights into the importance of knee alignment in landing mechanics and the potential impact of different types of instructions on movement control. Further research is needed to investigate the specific role of knee alignment in long jump performance and its possible effects on jump technique and performance metrics. Werner et al. (2022) examined the impact of externally focused (EF) vs. internally focused (IF) instructions on knee alignment during a "land-then-jump." he found that both EF and IF instructions positively influenced knee displacement during landing, suggesting that focusing on knee alignment can improve landing mechanics.

Back Position

Maintaining an appropriate back position during squats is vital for safety and effectiveness. Krämer (2021) explores biomechanical factors, including postural alignment, and their influence on long jump performance. Specifically, it looks at how body positioning, including the back angle during the take-off phase, impacts jump distance.

Another study by Jasminan et al. (2021) discusses the hitch-kick technique. This technique involves a single-step arm and leg cycle to mitigate forward rotation during the jump, highlighting the importance of coordinated body movements in flight. Further research is needed to investigate the specific role of the back position in long jump performance and its potential impact on jump technique and performance metrics. Additionally, Ilham, A. (2016) examined the prediction of physical variables, including back flexibility, on squat long jump achievement. The study found that back flexibility positively influenced squat long jump performance, highlighting the importance of flexibility in executing effective squat techniques during the jump.

Foot position and stability

Foot position and stability during squats are crucial for balance and performance. Kunz et al. (2020) discuss the influence of foot placement on stability and how it affects the biomechanical efficiency and performance of long jumpers. The study examines how adjustments in foot position at takeoff can reduce energy loss during flight, contribute to a better landing technique, and prevent injuries. However research by Maly et al. (2024) found significant correlations between ankle mobility and countermovement jump height, highlighting the role of foot and ankle mechanics in jump performance.

Additionally, a study by Cejudo et al. (2021) highlighted the importance of ankle range of motion (ROM) in jumping and landing mechanics. The research demonstrated significant correlations between ankle dorsiflexion ROM and countermovement jump (CMJ) performance, indicating that greater ankle mobility improves jump height and landing stability.

Hip and Knee Drive

Effective hip and knee drives are essential for optimal squat performance. Study by Reddy et al. (2020) research analyzed the angular kinematics of athletes during the flight phase, including

knee and hip angles, to determine their correlation with jump performance. Another study by Villarreal et al. (2018) explored the impact of plyometric training on sprint and jump performance, highlighting how hip and knee drive contribute to improved explosive strength and, consequently, longer jumps.

Additionally, Pratap et al. (2017) investigated the impact of linear kinematic parameters on long jump performance. The findings suggested that vertical velocity at takeoff, which is influenced by effective hip and knee drive, significantly contributes to jump distance. In conclusion, a strong hip extension and knee flexion during the final steps of the approach run transfer energy to the ground, propelling the athlete forward and upward. It indicates that both hip and knee drives contribute significantly to jump performance.

Core engagement

A strong and engaged core is crucial for providing stability during the long jump and allowing efficient force transfer from the lower body to the ground during takeoff. Santos et al. (2019) investigated the association between core endurance and athletic performance in inactive individuals. While they did not specifically examine long jump performance, core endurance did not significantly predict jump ability. Therefore, this suggests that core endurance alone may not predict substantial jump ability. However, Sannicandro et al. (2017) observed that prolonged core stability training led to increased strength in hip extensors and enhanced jump performance, including both countermovement and non-countermovement jumps, in teenage team sport athletes. Additionally, a 2023 systematic review investigated the effects of core training on athletic and skill performance in basketball players. The review highlighted that core training significantly improved vertical jump performance, suggesting a positive correlation between core strength and jumping abilities. These findings indicate that core engagement enhances long jump performance, as evidenced by improvements in standing long jump and vertical jump metrics following core training interventions.\

Movement Smoothness

Smooth movement patterns indicate an effective technique. As stated by Balasubramanian et al. (2015) provides a comprehensive analysis of movement smoothness, discussing various measures and their applications. While not directly linked to the long jump, it offers valuable insights into assessing movement smoothness. Another research from Figueiredo et al. (2020) compares different smoothness metrics to assess their effectiveness in evaluating upper limb movements during stroke rehabilitation, highlighting the importance of movement smoothness as a kinematic biomarker for movement quality and recovery.

Antekolović's (2024) research also examines how various kinematic factors affect long jump performance during the approach and take-off phases. The study identifies six significant variables, including take-off vertical velocity, horizontal velocity in the penultimate step, take-off horizontal velocity, the height of the body's center of gravity at the end of take-off, the percentage of lowering of the center of gravity in the penultimate step, and the distance from the knee projection to the foot. These findings suggest that the athlete's motor abilities and technical execution during take-off significantly influence jump length.

Breathing Pattern

A study by Migliaccio et al. (2023) examines the impact of breathing pace (slow vs. fast) on sports performance, highlighting the potential benefits of slow, voluntary breathing (VSB) for improving cardiovascular fitness, reducing stress, and enhancing focus. Breathing patterns can influence muscle coordination and power output. For example, proper breathing techniques during the approach run and takeoff could help optimize muscle activation and force transfer, potentially leading to a more powerful jump. However, Papaioannou (2024) discusses various breathing methods, such as box breathing and nasal breathing, highlighting their potential to improve oxygen delivery, reduce anxiety, and enhance focus—all factors that could positively influence long jump performance. Additionally, Liang et al. (2024) explored the relationship between respiratory patterns and physical fitness in healthy adults, highlighting the importance of optimal breathing patterns in athletic performance. While this research does not specifically address long jump athletes, it underscores the potential benefits of proper breathing techniques in sports performance. In conclusion, breathing strategies can influence an athlete's physical and mental state, potentially impacting performance. To measure the breathing pattern, the researcher will use a timer to calculate how long the athlete holds their breath in seconds while doing the squat ability technique in the long jump.

Long Jump Performance

Long jump performance is multifaceted, encompassing both the physical and technical aspects of the jump. A study by Zhou et al. (2020) comprehensively reviews factors influencing standing long jump performance, including g-arm motion, takeoff angle, standing posture, warm-up exercises, and handled weights. This resource is valuable for understanding various aspects of the long jump technique and potential improvement areas. Antekolović (2024) analyzes how different kinematic parameters during the approach and take-off phases affect long jump outcomes. Additionally, Diosalan et al. (2024), this research examines the effects of plyometric training on enhancing long jump performance among university students. It concludes that strength and plyometric training can improve long jump performance.

Jump Distance

The long jump is a multifaceted performance that requires a combination of speed, technique, and strength. The research indicated that while sprint ability is a primary determinant of jump distance, body composition, particularly the lean body mass to fat mass ratio, plays a significant role in running long jump performance (Azuma et al. 2021). However, Rahim et al. (2020) indicated significant positive correlations between these fitness components and jump distance, highlighting the importance of comprehensive physical conditioning in enhancing long jump performance. Additionally, to Lin et al. (2023), there are moderate to very large associations between horizontal jump distance sprint acceleration and maximal speed performance, suggesting that sprint ability is a crucial factor in long jump performance.

Take-off Technique

Proper take-off technique is vital for maximizing jump performance. Fattah et al. (2020) emphasizes the importance of transforming horizontal approach velocity into horizontal and

vertical take-off velocity during the support phase. It highlights that elite long jumpers adjust their body position during the pre-last stride by increasing stride length, thereby lowering the center of gravity, which is crucial for effective take-off. However, Panoutsakopoulos et al. (2021) provides insights into how different take-off techniques and their execution levels affect performance.

Additionally, a study by Shepherd (2018) delves into the biomechanics of the take-off phase, emphasizing the importance of the stretch-reflex mechanism in the muscles of the ankles, knees, and hips. The article suggests that long jumpers should regularly practice full approach runs to develop the timing for effective take-offs and incorporate exercises that enhance eccentric capacity and leg stiffness. In conclusion, a proper takeoff technique during a jump can maximize long jump performance.

Flight Phase

The flight phase of the long jump is influenced by the athlete's ability to maintain control and body position. Chandana et al. (2021) examines how variations in body surface area and arm movements during the flight phase affect aerodynamic drag and, consequently, long jump performance. The study found that minimizing the body's surface area during the aerial phase can enhance performance, with the Hang technique demonstrating the lowest aerodynamic drag. Jayaneththi (2022) analyzed body surface area changes during the flight phase among six national senior male long jumpers in Sri Lanka. The findings indicated a negative correlation between body surface area changes and performance, suggesting that minimizing body surface area in the frontal plane during flight can optimize long jump performance. Additionally, Antekolović (2023) conducted a 3D kinematic analysis of 14 long jumpers, identifying key variables such as take-off vertical velocity, horizontal velocity in the penultimate step, and the height of the body's center of gravity at the end of the take-off as significant factors influencing jump length.

Landing Technique

The landing technique in the long jump is a complex process that involves a combination of physical attributes. A study by Gray et al. (2021) discusses how technique training, including instruction and feedback on jump landing performance, can reduce biomechanical risk factors during landing movements. It emphasizes the role of proper landing mechanics in enhancing performance and minimizing injury risks. However, Lindblom evaluates changes in jump-landing technique among youth football players following an 8-week injury prevention training program. The findings suggest that technique training can lead to improvements in landing mechanics, which may indirectly influence performance. Additionally, Scherrer et al. (2022) analyzed how different takeoff and landing strategies affect the distance measured in standing long jumps. The findings indicated that the landing distance has a more significant impact on the total jump distance than the takeoff distance. The athletes can enhance their jump performance by optimizing their landing techniques.

Approach Speed

Approach speed is a critical determinant of long jump success. A study by Shang (2022) shows a direct relationship between approach speed and long jump performance. The faster the approaches speed, the better the results. Additionally, research

indicates that approach speed is important in achieving optimal jump performance. It suggests that muscle power and coordination likely contribute to an athlete's ability to generate high approach speeds Wilson et al. (2011). Additionally, **Sajwan et al. (2017)** emphasized that jump performance is significantly improved by high approach speed, along with optimal knee angle at touchdown and strong muscle strength. Therefore, approach speed helps athletes enhance long jump performance.

Technique and Form

The integration of plyometric exercises can refine an athlete's technique and form, as noted by the study of Koshiy et al. (2020), the research investigates the impact of plyometric exercises on enhancing lower limb strength and speed in long jumpers, highlighting the benefits of specific training methods. Another research from Schexnayder (2017) study delves into various aspects of long jump technique, including pre-preparation, takeoff, and teaching progressions, highlighting how influences performance form.

Azuma et al. (2021) also indicate the complex relationship between technique, form, and physical attributes in long jump performance. While physical attributes like speed, power, and strength are crucial, proper technique and form amplify their effectiveness, maximizing jump distance. Integrating plyometric training can improve the athlete's technique and form.

Reaction Time

Reaction time is essential in executing the long jump. The study highlights the importance of reaction time in athletic performance, which could be relevant to the takeoff phase of the long jump, Gürses et al. (2019). However, Pilianidis et al. (2012) examined the relationship between reaction time and 60 m sprint times, finding a significant correlation, suggesting that reaction time influences sprint performance, which is relevant to events like the long jump.

Additionally, a study by Friebe et al. (2021) emphasizes the role of reaction time in adapting to unanticipated stimuli. This could be relevant to long jump performance, as athletes must react quickly to changes in their environment during the approach and takeoff.

Athlete's Background

Training

The training background of a long jumper significantly influences their performance, impacting both the physical attributes and technical skills required for success. Strength training, particularly exercises like squats, is crucial for developing the power needed for takeoff, McCosker et al. (2019). It emphasizes that a well-rounded training program is important to address both physical attributes and technical skills in long jump success. As stated by Anantharaj et al. (2018) the effects of skill training, both with and without video feedback, on long jump performance among university students. The findings indicated significant improvements in long jump performance due to both training methods, with video feedback showing a more pronounced effect.

Additionally, Paul, et al. (2018) explored the impact of plyometric drills on enhancing lower extremity strength and speed in long jump athletes. The results demonstrated that plyometric

training effectively improved static strength, dynamic strength, and speed compared to conventional training methods.

Competition Experience

A study by Jones et al. (2021) investigates how different run-up strategies during competitive long jumping are influenced by athletes' experience and self-regulation. By analyzing gait measures during competition, the research provides insights into how experienced athletes adjust their techniques in response to competitive constraints. However, Davids et al. (2021) examines how experienced long jumpers regulate their run-up strategies during competitions, providing insights into the relationship between competition experience and performance.

A study by McCosker (2021) explored how elite coaches identify constraints affecting long jump performance and how practice designs can improve athletes' self-regulation during competitions. It provides insights into the relationship between experience and performance in long jump athletes. In conclusion, the study shows that athletes with competitive expertise have a vital advantage in athlete performance.

Technical Skills

Technical skills are fundamental to achieving success in the long jump. While physical attributes like strength and speed are important, mastering the technical aspects of the jump is crucial for maximizing distance and consistency Zong (2023). Another study by Diosalan et al. (2024) investigated the effects of plyometric training on long jump performance and found significant improvements in jump distances among participants who underwent an eight-week plyometric training program. The effectiveness of plyometric exercises in enhancing the explosive power necessary for the long jump. Additionally, Kozlova et al. (2020) identifies individual biomechanical characteristics of long jump techniques among skilled athletes, providing insights into how technical skills influence performance. Therefore, it is important to practice and undergo training to improve technical skills in jumping to achieve a better result.

Support and Environment

The support and environment surrounding a long jumper are crucial in shaping their performance, especially long jump performance. Koshiy et al. (2020) investigated the effectiveness of plyometric drills in enhancing lower extremity strength and speed among long jump athletes, highlighting the role of training environment and support in performance improvement. The study found that wind strength and direction significantly affect outcomes. Recognizing these constraints enables practitioners to design representative training tasks, providing athletes with opportunities to explore and develop movement solutions specific to the context of their performance environment McCosker et al. (2019). By creating a positive and supportive environment that fosters growth, development, and adaptation, athletes can maximize their potential and succeed in this challenging and rewarding event. Additionally, Wulf et al. (2017), examined the impact of support and environment on long jump performance. The research explored how autonomy support, external focus of attention, and enhanced expectancies—key components of the OPTIMAL theory—affect motor performance and learning. The findings suggest that these variables independently and

interactively influence performance outcomes in young adolescents.

Synthesis

The relationship between physical attributes and long jump performance is complex, involving a combination of factors contributing to a successful jump. Research suggests that several physical attributes are crucial in determining long jump performance. Such physical attributes are height, weight, arm length, and leg length, the research indicate that these physical attributes can influence long jump performance. This finding was the evidence, it was indicated that height and limb length significantly impact long jump performance. Taller athletes generally benefit from a greater center of mass and limb length, which can contribute to longer distances in long jumps. Limb length, particularly leg length, is crucial for producing effective force during the takeoff phase. Squat ability significantly predicts long jump performance, particularly relative squat strength. The studies indicated that squat strength and training intensity can significantly influence jump performance, a critical component of long jump success. Long jump performance is a complex interplay of various physical characteristics, each contributing to the overall success of the jump. Therefore, studies collectively demonstrated the complex interplay of factors contributing to successful long jump performance, including sprint ability, body composition, technique, and biomechanical principles. In conclusion, proper squatting during takeoff has dramatically improved long jump performance. The athletes' backgrounds have a crucial impact on the athletes' long jump performance. Evidence supports that athlete background and physical attributes in long jump performance are complex and multifaceted. This concludes that physical attributes, specifically an athlete's background, are essential and greatly impact the long jump performance.

Overall, integrating physical attributes significantly impacts long jump performance. While technique and training play crucial roles in improving long jump performance, and certain physical characteristics are essential for maximizing jump distance. An athlete background play a significant association with athlete long jump performance, athlete with athletic training background can jump in higher distance compare with training background. Therefore, it is important to consider that using physical attributes to select an athlete is significantly effective. But still, training to improve an athlete's long jump skills is essential for developing individual athletic skills.

Methodology

Research Design

This study determined the relationship between physical attributes, squat ability, and long jump performance in a sample of athletes. It utilized a mixed-method approach, combining a survey questionnaire to gather quantitative data on physical attributes, squat ability, and long jump performance. It was followed by semi-structured interviews to delve deeper into athletes' qualitative experiences and perceptions regarding their training and performance. Aguera et al. (2017) used a mixed-method approach to study the relationship between physical attributes and athletic performance. This approach involved observing athletes in training and competition settings and analyzing their movements and behaviours.

In relation to this study also used a mixed-method approach. This approach design was divided into two phases:

Quantitative Data Collection and Analysis. In this phase, the survey questionnaire was used to examine the relationship between physical attributes and long jump performance among the respondents. The variables measured include height, weight, arm length, and leg length. These measurements clearly showed the respondents' physical attributes in long jump performance.

Furthermore, the study assessed the long jump performance. Key factors such as jump distance, take-off technique, flight phase, landing technique, approach speed, overall technique and form, and reaction time were examined to determine the relationship between physical attributes and long jump performance. In addition to long jump performance, the study assessed the respondents' squat ability. This evaluation considered aspects such as squat depth, knee alignment, back position, foot position and stability, hip and knee drive, core engagement, movement smoothness, and breathing pattern.

Qualitative Data Collection and Analysis. A semi-structured interview examined the relationship between participants' backgrounds and long jump performance in terms of training, competition experience, technical skills, support, and environment.

Respondents of the Study

The study participants were the selected junior high school male and female students from Datu Mantato National High School. These students were chosen because they voluntarily participated in the long jump screening. Their participation aligned with the study's objectives, as they had physical attributes and characteristics and were willing to undergo screening in the long jump.

To ensure consistency and relevance in the data collection, the study included thirty (30) junior high school participants, 18 males and 12 females, who voluntarily agreed to participate in the long jump screening, providing informed consent or parental consent as required. Conversely, students from the senior high school level and those with medical conditions or physical limitations that prevent full participation in activities were excluded. These criteria aim to maintain a well-defined and representative sample, thereby enhancing the validity and reliability of the study's findings. The number of participants was selected based on the suggestion of Malek (2020), who recruited 30 male university long jumpers to examine the relationship between selected physical fitness components and long jump performance.

Locale of the Study

The study was conducted in Datu Mantato National High School, located at Benolen Datu Odin Sinsuat, Maguindanao Del norte. This school was strategically chosen as a research locale due to large and diverse student population and the school implemented an athletic training. The school provided an ideal environment to explore the relationship between physical attributes, squat ability, and long jump performance among students. The study examined the relationship between the respondents' physical attributes, squat ability, and long jump performance by focusing on this school. The site development plan of Datu Mantato National High School is indicated in Figure 2 below.

Research Instrument

This instrument evaluated the relationship between the respondents' physical attributes, squat ability, and long jump performance from Datu Mantato National High School. The questionnaire was divided into three primary sections, each addressing the key performance areas under investigation.

The first section assessed the respondents' physical attributes, including height, weight, arm length, and leg length. Each factor was rated using a demographic survey questionnaire instrument. This section aimed to measure the relationship between physical attributes and long jump performance. The second section examined the respondents' long jump performance and squat technique ability. It included evaluating long jump metrics such as jump distance, take-off technique, flight phase, landing technique, approach speed, technique and form, and reaction time. Key factors such as squat depth, knee alignment, back position, foot stability, hip and knee drive, core engagement, movement smoothness, and breathing pattern were assessed for the squat technique. This section also used research-made 5-point Likert Scale rubrics to rate the respondents' performance, allowing for the examination of the relationship between physical attributes and long jump performance. The third section examined the athlete's background, including training, Competition Experience, Technical Skills and Support, and Environment. It used a research-based survey questionnaire to evaluate the relationship between the respondents' backgrounds and their long jump performance. To ensure the validity of the research instrument, three professional experts in physical education and sports science reviewed and validated it. These experts assessed the questionnaire's content for relevance, clarity, and accuracy, ensuring that it effectively captured the required data for the study. This process helped confirm that the instrument was reliable and robust for measuring the relationship between physical attributes, squat ability, and long jump performance.

Data Gathering Procedure

In this research, the data collection process were described as a researcher's guide to help the researcher collect thorough data. The first process was the communication phase, a letter of request to conduct the study was sent to the office of the research adviser for signature, as noted. It was forwarded to the office of the graduate school dean of Sultan Kudarat State University (SKSU) for approval. The researcher sent letters of communication to the office of the school principal of Datu Mantato National High School and the study respondents. Furthermore, the researcher also solicits permission and approval from the respondents to prove their voluntary participation in the study. The researcher gave a letter of approval to the school principal of Datu Mantato National High School to obtain permission to conduct a study at their school. After the approval from the School Principal, the researcher presented a letter from respondents. The researcher also consented to the respondents' parents for allowing their son/daughter to participate in the study. The researcher carefully explained the study details to the participants. Confidentiality was assured as data would be coded, substituted by real names, or optional. Followed by identification of participants. First steps were observed was, the researcher sent a letter to the advisers, informing them to conduct the study and ask their students who were willing to participate as study participants and was willing to

undergo long jump screening. After that, all participants will be notified about the details of the study. After that, the distribution of the demographic survey questionnaire. First steps were observed, the researcher informed all participants to answer their demographic information. After that, the researcher assist the respondents to get their height using height measurement; weight using weighing scale; arm length and leg using tape measurement, each respondents will record their demographic information based on their present weighing scale and measurement. They returned the survey questionnaire after they had responded all the questions. The survey questionnaire was validated by professional expert to ensure its validity and reliability. Then the researcher informed all the participants about the study's details and prepared all the materials needed for the long jump screening. Then, the participants underwent a long jump screening. They jumped on the first trial, the second trial, and the final jump and the researcher recorded their scores and rated their performance using rubrics.

The next was the conduct of semi-structured interviews. Participants underwent a focus group interview after a long jump screening. They answered the questions given by the researcher based on their background experience. The researcher ensured that the participants participated in the focus group interview to gather valid and reliable information about the study. The researcher noted or recorded all information collected.

The researcher consolidated, interpreted, and presented the data gathered after consolidating the focus group interview and conducting a survey questionnaire to reach a valid result and a strong conclusion.

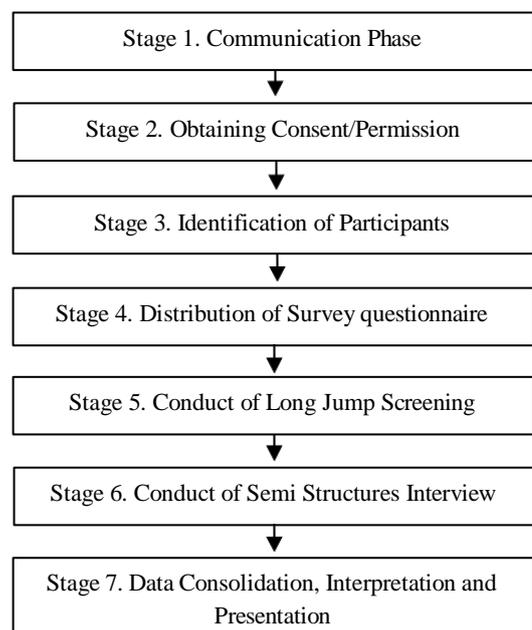


Figure 3. Waterfall Diagram of Data Gathering Procedure

Statistical Treatment

To interpret and analyze all the gathered data the statistical tools were used was the mean and standard deviation for each category of physical attributes, level of squat ability and level of long jump performance. For the physical attributes the indicators were; height, weight, arm length, and leg length, for the level of squat ability; such as depth of squat; knee alignment; back position; foot position and stability; hip and knee drive; core engagement;

movement smoothness, and breathing pattern and long jump performance; jump distance; take-off technique; flight phase; landing technique; approach speed; technique and form, and reaction time, which summarizes and describe the participants levels of performance.

The study measured the relationship between physical attributes, squat ability, and long jump performance. It used the correlation coefficient (*r*) and a P-value to assess the correlation's statistical significance.

It also used thematic analysis, frequency count, and qualitative analysis to identify common patterns and insights regarding athletes' backgrounds. It included training, competition experience, technical skills, support and environment, and qualitative analysis to provide deeper insights into meanings and themes derived from participants' responses.

Results and Discussion

The findings of the data obtained throughout the study are presented, analyzed, and interpreted in this chapter. It includes the participants' demographic profile, descriptive statistics for the level of athletes' squat ability during their long jump take off, descriptive statistics for the level of athletes' long jump performance, and the interpretation of the relationship between physical attributes and long jump performance and interpretation of the relationship of squat ability and long jump performance. The analysis includes a detailed examination of the data, highlighting key trends and patterns and discussing the implications of these results in the context of the research objectives. The chapter aims to comprehensively understand the relationship between participants' physical attributes, squat ability, and long jump performance.

Physical Attributes of Students in Terms of Height, Weight, Arm Length, and Leg Length

Table 1.1 Height

	Mean	SD	Description
Height	1.61	0.08	Relatively low

Table 1.1 presents the respondents' physical attributes, with mean values and standard deviations (SD) for height, it shows that the respondents have an average height of 1.61 meters, with a standard deviation of 0.08 with the description of relatively low standard deviation, indicating that most students have similar heights.

The above findings are supported by the study conducted by Dhankhar (2018), which analyzed various anthropometric measurements, including standing height, weight, leg length, and arm length, to determine their relationship with long jump performance. The results indicated that lower arm length, calf girth, and thigh girth had significant correlations with long jump performance, while other measurements did not show statistically significant relationships.

However, Alghadir et al. (2022) concluded that height, weight, leg length, and arm length were not statistically significant factors influencing long jump performance. Additionally, Mishra et al. (2016) developed a formula to predict long jump performance

based on male athletes' speed, agility, height, and weight. The study concluded that this formula can be used to determine the long jump performance of male athletes.

Physical Attributes of Students in Terms of Height, Weight, Arm Length, and Leg Length

Table 1.2 Weight

	Mean	SD	Description
Weight	49.34	6.20	Higher

Table 1.2 shows that the respondents' average weight is 49.34 kg, with a standard deviation of 6.20. This indicates a higher standard deviation and suggests more body weight variation among students.

This is supported by the study of Tremblay et al. (2020), which explored the effect of additional body weight on standing long jump (SLJ) performance and its correlation with sprint speed. The researchers found that using 15% of body weight as additional load in the SLJ was better correlated to 10m or 20m sprint times than a standard SLJ, suggesting that weighted SLJ could be a useful predictor of sprint performance.

Another study by Pranata (2022) investigated the relationship between body weight, height, and long jump performance in young athletes. The study concluded a negative relationship between body weight and long jump distance, meaning that heavier weight is associated with shorter jump distances. Conversely, height had a positive relationship with jump performance. Additionally, Siddhartha et al. (2024) examined the relationship between body mass index, fitness levels, and mortality, providing insights into how body weight and fitness interact.

Physical Attributes of Students in Terms of Height, Weight, Arm Length, and Leg Length

Table 1.3 Arm Length

	Mean	SD	Description
Arm length	51.20	5.16	Moderate

Table 1.3 shows that the respondents' arm length is 51.20 cm, with a standard deviation of 5.16, and it describes average and moderate variability.

The findings indicated that arm length positively correlated with long jump performance, suggesting that longer arms may contribute to better results in the event (Singh et al., 2021). Similarly, a study by Milanović et al. (2025) indicates that arm span correlates with jump distance, highlighting the potential influence of arm length on performance.

However, a study by Kumar et al. (2020) assessed the relationship between selected anthropometric measurements and long jump performance. The study found that arm length was one of the measurements that had no statistically significant relationship with long jump performance. Additionally,

Physical Attributes of Students in Terms of Height, Weight, Arm Length, and Leg Length

Table 1.4 Leg Length

	Mean	SD	Description
Leg length	80.27	8.52	Greater

Table 1.4 shows that the respondents’ average leg length is 80.27 cm, and the higher standard deviation of 8.52 cm indicates greater diversity in leg length among students.

According to the study of Nallarasu et al. (2021), various factors influencing long jump performance, including leg length, flexibility, leg strength, and explosive power, were analyzed. They concluded that these elements significantly impact performance. Similarly, Koley et al. (2016) compared anthropometric variables between high and low-performing long jumpers, finding significant differences in upper and lower leg lengths between the two groups. However, Saha et al. (2019) found a negative correlation between leg length and long jump performance, suggesting that longer legs might not necessarily contribute to better performance in this event.

Table 2. Level of Students’ Squat Ability in Terms of Depth of Squat, Knee Alignment, Back Position, Foot Position and Stability, Core Engagement, Movement Smoothness, and Breathing Pattern

	Mean	SD	Description
Depth of Squat	3.00	1.29	Hip crease is at or slightly below knee level. An optimal depth for strength training was considered, with a depth of 14 - 16 inches from the ground to the hip crease.
Knee Alignment	3.17	1.23	Knees mostly aligned but some instability.
Back Position	3.23	1.28	Neutral spine is maintained most of the time.
Foot Position & Stability	3.30	1.26	Feet are mostly stable, but slight adjustments are needed.
Hip & Knee Drive	3.27	1.26	Drive is moderately effective but inconsistent.
Core Engagement	3.30	1.26	Moderate core activation, some control issues.
Movement	3.30	1.39	Movement is mostly smooth but could improve.
Smoothness			
Breathing Pattern	3.47	1.14	Proper inhalation before descent and exhalation during ascent, with minor issues.
Squat ability	3.25	1.18	Average

Table 2 presents the respondents' level of squat ability based on various criteria, with mean scores and standard deviations (SD). The respondents’ squat ability had a mean of 3.25 and a standard deviation of 1.18. The results demonstrate an average squat ability. The result implies that the respondents can perform squats with moderate proficiency but have areas needing improvement. The respondent's squat performance is average, with strengths in breathing patterns, foot stability, and core engagement. However, areas like depth of squat, knee alignment, and hip and knee drive show some inconsistencies, suggesting the need for strength training, flexibility exercises, and technique refinement. Implementing corrective exercises and proper training could help improve their overall squat performance.

Result suggests that individuals with moderate proficiency in performing squats, who may have areas needing improvement,

could still experience significant effects on their long jump performance (Huda et al., 2020). The same study by Kambleet al. (2017) indicated that squat jump training significantly improved vertical jump height, suggesting potential benefits for other jumping events. Lorenzetti et al. (2018) also indicated that different squat techniques significantly influence musculoskeletal movement and loading conditions, suggesting that specific variations can be tailored to achieve training goals.

Table 3 shows the respondents' overall long jump performance results, with a mean of 3.02 and a standard deviation of 1.17. The result is that the overall long jump performance of the participants is average and positioned at a moderate level, signifying that while respondents possess some abilities, significant improvements can be made across various dimensions of the long jump.

Table 3. Level of Student's Long Jump Performance in Terms of Jump Distance, Take-Off Technique, Flight Phase, Landing Technique, Approach Speed and Technique and Form, and Reaction Time

	Mean	SD	Description
Jump Distance	1.87	0.82	Jumps less than 3 meters.
Take-Off Technique	3.30	1.18	Adequate take-off, moderate power, slight.
Flight Phase	3.33	1.40	Adequate control, decent posture, and use of arms and legs.
Landing Technique	3.40	1.50	Adequate landing, some balance issues, moderate leg extension.
Approach Speed	3.13	1.25	Moderate speed, decent acceleration, slight inconsistencies.
Technique and Form	2.97	1.25	Good technique, but needs more refinement for efficiency.
Reaction Time	3.13	1.33	Average reaction time, decent response at take-off.
Long Jump Performance	3.02	1.17	Average

With that, participants can exhibit some basic competencies in long jump techniques; targeted training and development in specific areas such as jump distance, landing, and overall technique refinement would enhance their performance effectively. This study, supported by the study of Koshy et al. (2020), examined long jump athletes' physical characteristics and performance metrics. The research found that the respondents' long jump performance was moderate, with a mean horizontal jump distance of 2.90 meters and a standard deviation of 0.11 meters. However, Wu et al. (2025) indicated that such training could enhance long jump performance,

with the number of training sessions positively correlating with improvements.

Additionally, a study by Sin et al. (2019) examined the impact of plyometric exercises on long jump performance. The research involved 32 participants and found that the average long jump score increased from 350.31 cm to 374.66 cm after the training, indicating a significant performance improvement. The result suggests that the respondents' initial performance was moderate, and the plyometric exercises effectively enhanced their long jump capabilities.

Table 4. Relationship of Physical Attributes and Long Jump Performance

Long jump performance x X_i	R	Pvalue	Interpretation
Height	0.43	0.02	Moderate
Weight	0.56	0.001	Moderate
arm length	0.46	0.01	Moderate
leg length	0.27	0.15	No association

Table 4 shows that height, weight, and arm length show a significant moderate association. Furthermore, multiple regressions show that weight is the best predictor for long jump performance, suggesting that these physical attributes can enhance a participant's jumping ability. However, leg length does not show a significant connection, indicating that other factors might be more influential in this specific athletic performance. The research found that body weight had a significant inverse relationship with long jump results, indicating that higher body weight was associated with shorter jump distances. In contrast, body height did not statistically affect performance (Pavlović et al., 2022).

Another study by Reddy et al. (2020) examined the correlation between anthropometric variables and long jump performance. The research found that lower arm length had a significant negative correlation with long jump performance ($r = -0.491$), indicating that longer lower arms were associated with shorter jump distances. However, standing height, weight, and upper arm length did not correlate significantly with performance, and lower arm length had a significant negative correlation with long jump performance. At the same time, calf girth and thigh girth showed positive correlations (Dhankhar, 2018).

Table 5. Relationship of Level of Squat Ability and Long Jump Performance

Long jump performance x X_i	R	Pvalue	Interpretation
levels of squat ability	0.92	<0.00001	Very Strong

Table 5 shows that squat ability is significantly and very strongly associated with long jump performance. The result implies that enhancing squat strength and technique could improve respondents' long jump results. Further training focusing on developing squat ability may substantially benefit long jump performance. The researchers found that relative squat strength significantly correlated with squat jump and countermovement jump performance, explaining 45–53% of the variance in these measures.

The result suggests a strong association between squat strength and jump performance (Keiner et al., 2022). Similarly, Kadir et al. (2021) examined how peer squat exercises impact long jump abilities among students, finding a positive effect. Additionally, research explored correlations between physical fitness components, including squat strength, and long jump performance, highlighting significant relationships (Asyraf et al., 2020).

This section presents the findings on the relationship of physical attributes, squat ability, and long jump performance of Maguindanaon junior high school athletes. The themes emerged through a rigorous thematic analysis, which involved identifying significant statements, formulating initial themes, clustering related themes, and determining the overarching themes.

Emerging Themes on the Students’ Other Attributes in Performing the Long Jump

Five (5) emerging themes were identified through thorough data analysis and interpretation, synthesized from various initial and clustered themes. These emerging themes are as follows: Precision, Training and Performance, Qualifications and Competition Experience, Holistic Skills and Characteristics, Support System, Commitment, and Lack of Training Resources. These themes emphasize the importance of continuous athletic training to develop technical skills and improve athletic participation.

Table 1.

Students’ Other Attributes in Performing the Long Jump

Emerging Theme/s	Clustered Themes	Codes	Significant Statements
1. Precision, Training and Performance	Training experience	Volleyball Training	“I undergo a volleyball training 4 hours of training a day and our training is about volleyball drills.” (P1)
	Time Frequency	Volleyball Drills	“I experience an athletic training, I do jogging and running about 2-3 hours and sometimes I played also basketball.” (P4)
	Sports Drills	4 hours	“Since I am a dancer, I joined dance contest and I practice dance about 2 hours in a day.” (2)
	Athletic Training	Running and Jogging	
	Dance Practice	Playing basketball Drills Dancer	
2. Qualifications and Competition Experience	Competition Level	Division Meet	“We competed at division meet level but on this in my high school. we only compete until zone meet level and we won a silver medal.” (P1)
	Award	Silver Medal	
	Sports Competition	Zone Meet	“I was only competing until school level and I also joined a running competing in my Arabic study since my age is not qualified in division meet level.” (P4)
	Age Disqualification	School Level	
	Sport Determination	Running Athletics	“I was competing from zone meet to division level in running competition and I don’t have a medal during division level but I try my best during our competition.”(P7)

3. Holistic skills and characteristics	Strength	Team Trust		“My strength is when my team mates having a trust on me in playing volleyball and our team sportsmanship. And my weakness is that when I think that accidentally I got injured during game so that I’m afraid.” (P3)	
	Weakness	Sportsmanship			
	Technical Skills		Fear of Injury		“My strength is I’m good at running and basketball and my weakness is when got so tired I got a stomach-ache.” (P4)
			Good Athletic Skills		“My strength is I can practice alone even in the mountain I practice running and my weakness is sometimes I can easily discourage.” (P8)
	Self Discipline		Physical Limitation		
	Emotional Resilience		Independent Practice		
		Easily Discourage			
4. Support System and Commitment	Family Support, Mentorship and Influence	Coach		“Our coaches, who didn’t stop support and train us even though sometimes we are stubborn, and also my relatives, our principal and my teacher who encourage me to pursue my volleyball game.” (P3)	
		Relatives			
	Encouragement		Principal	“My father supported me and I practice myself since I don’t have coach.” (P4)	
	Sport Commitment		Teachers		
			Parents		“Number one who supported me is my coach who trains me in our practice, 2 nd is our friends who cheer me during game and of course my family who always support me.” (P7)
		Self Support			
5. Lack of Training Resources	Lack of Sports Equipments	Sports Facilities and Equipments		“I don’t have sports equipments, I only borrowed in my friends and at school.” (P1)	
	Limitation of access to sports equipment resources		Volleyball Ball	“I only have volleyball ball and we borrowed a net in our school during our practice.” (P2)	
		Reliance on Borrowed Resources	Equipment School Ownership		“I don’t have equipment; we borrowed at school and to my friends when we have a practice.” (P4)
		Equipment in Practice			

Emerging Theme 1: Precision, Training, and Performance

This emerging theme is defined by athletes' prior training experience, time frequency, sports drills, athletic training, and dance practice. It emphasizes that athletes come into different sports training experiences with time-intensive frequency and drills that impact their long jump performance.

Participants expressed:

"I undergo volleyball training from 6:00 am to 10:00 am and 2 2-hour break after that training, starting 1:00 pm until 4:00 pm. Four hours of training a day, our training is about volleyball drills. "I undergo a volleyball training from 6:00 am to 10:00 am, and 2 2-hour breaks after that training, again starting 1:00 pm until 4:00 pm. 4 hours of training a day, and our training is about volleyball drills." (P1)

"Athletic training po ma'am, gajogging and running po ako 2-4 hours and sometimes I play basketball din po" ["I experience an athletic training, I do jogging and running about 2-3 hours and sometimes I also play basketball ma'am."] (P4)

"Pwedeba ang dance ma'am? Since I am a dancer, I joined a dance contest and practice dance for about 2 hours daily. "Can I include dance, ma'am? Since I am a dancer, I joined a dance contest and I practice dance for about 2 hours a day." (P2)

Approximately 7 out of 8 participants highlighted their extensive sports training backgrounds, which have significantly contributed to their capabilities in long jump performance.

Emerging Theme 2: Qualifications and Competition Experience

This emerging theme is characterized by athletes' competition level, awards, sports competition, age disqualification, and sport determination. This indicates that all athletes experience competition on the local level with sport determination.

Participants expressed:

"On my elementary, umabot po ako ng division meet ma'am peronitongbago po hanggang zone meet level lang po kami at silver po ang medal naming" ["On my elementary, we compete at division meet level but on this in my high school, we only compete until zone meet level and we won a silver medal."] (P1)

"Pero ako ma'am ay hanggang school at sapagaaral ko lang po sa Arabic akonakasalisa competition kc over age na po idad ko dinapwedesa division level ma'am" ["I was only competing until school level and I also joined a running competing in my Arabic study since my age is not qualified in division meet level."] (P4)

"Zone meet hanggang division meet lang po ma'am ang nasalihan ko sa competition sa running ko, walaakongnakuhasa division level pero I try my best po during sa competition" ["I was competing from zone meet to division level in running competition

and I don't have a medal during division level but I try my best during our competition." (P7)

All participants experienced a local level of competition, which highlighted their active participation and sports determination in engaging specialized sports events.

Emerging Theme 3: Holistic Skills and Characteristics

This emerging theme encompasses athletes' strengths, weaknesses, technical skills, self-discipline, and emotional resilience. It highlights the athletes' technical skills, which are characterized by their abilities in playing specific sports.

Participants expressed:

"Ang strength ko ma'am sa volleyball is yong may tiwalasaakinyongmgakakampi ko or pagkakaroon po ng sportsmanship at ang kahinaan ko naman ma'am ay pagnaisip ko is paanokong ma injury ako kaya natatakotako ma'am" ["My strength is when my team mates having a trust on me in playing volleyball and our team sportsmanship. And my weakness is that when I think that accidentally I got injured during game so that I'm afraid."] (P3)

"My strength ma'am is magalingakosa running at basketball and my weakness ay pagnagtagalna ang takbo at laro ko ay sumasakit ang tiyan ko ma'am" ["My strength is I'm good at running and basketball and my weakness is when got so tired I got a stomachache."] (P4)

"My strength, ma'am, is I practice alone po kahitsabundoknagpapapractice po ako at ang weakness ko ma'am is minsanmadali po akomadiscourage" ["My strength is I can practice alone even in the mountain I practice running and my weakness is sometimes I can easily discourage."] (P8)

Approximately 4 out of 8 participants were highlighted as having good holistic skills and characteristics in sports, but some of them had physical limitations in performing sports.

Emerging Theme 4: Support System and Commitment

This emerging theme underscores the significance of family support, mentorship and influence, encouragement, and athletes' sports commitment. Such support mechanisms help provide the financial and moral backing needed to sustain and enhance athletes' sports skills.

Participants expressed:

"My coaches, ma'am nahindi kami sinukuanitrankahitmatigas po minsan ang ulo namin, my relatives, our principal, and to my teacher po who encourage me to pursue playing volleyball" ["Our coaches who did not stop training us even though sometimes we are stubborn, and also my relatives, our principal, and my teacher who encourage me to pursue my volleyball game."] (P3)

"My father at ako po kc walaakong coach ma'am sarilingkayod lang po ang practice ko." ["My father

supported me and I practice myself since I don't have coach." (P4)

"Ang sumusuportasaakin ma'am is una ma'am is coach ko pinapapracticeako, pangalawa is kaibigan ko ma'am they cheer me during game and of course family ko po ma'am they always support me." ["Number one, who supported me, is my coach, who trains me in our practice; second, our friends cheer me during the game; and of course, my family always supports me."] (P7)

All 8 participants emphasized the significant efforts and support of their parents, coaches, and friends in addressing challenges in specialized sports events.

Emerging Theme 5: Lack of Training Resources

This emerging theme encompasses issues specific to the resources of specialized sports events, including a lack of sports equipment, limitation of access to sports equipment resources, and reliance on borrowed Resources. It underscores strategies such as borrowing resources and securing necessary materials and support, effectively bridging gaps caused by limited resources.

Participants expressed:

"Wala po ma'am, nanghihiram lang po akosamgakaibigan ko at sa school po" ["I don't have sports equipments, I only borrowed in my friends and at school."] (P1)

"Wala din po. Nanghihiram lang din sapinsan at samgakaklase ko." ["I also do not have any equipment; I borrowed it from my cousin and my classmates."] (P2)

"No ma'am, nanghihiram lang po kami sa school or kaibigan po ng mgagamit para sa practice naming." ["I don't have equipment; we borrowed at school and to my friends when we have a practice."] (P4)

Approximately 7 out of 8 participants identified challenges related to the lack of training resources in special sports events, particularly in terms of accessibility, athlete participation, and coaching limitations.

Discussion of the Findings

Emerging Themes on the Students' Other Attributes in Performing the Long Jump

A comprehensive analysis of students' background experience identified five emerging themes regarding skills and abilities in performing the long jump. These themes are Precision, Training and Performance, Qualifications and Competition Experience, Holistic Skills and Characteristics, Support System and Commitment, and Lack of Training Resources. These themes provide a deep understanding of the relationship between physical attributes, squat ability, and long jump performance of Maguindanaon junior high school athletes.

Emerging Theme 1: Precision, Training, and Performance

Maguindanaon junior high school athletes demonstrate different sports training experiences that enhance their specific athletic skills. Many demonstrate prior training experience, time

frequency, sports drills, athletic training, and dance practice. It emphasizes that athletes come into different sports training experiences with time-intensive frequency and drills that impact their long jump performance. Out of 9 participants, 7 highlighted their extensive training backgrounds in sports, significantly contributing to their capabilities in long jump performance. Athletes emphasized that such athletic training experience was essential for developing and enhancing their skills in specific sports events. Through experiencing training, athletes not only expanded their skill sets and gained confidence in their ability to deliver specialized sports participation effectively.

However, some participants were engaged in different training like volleyball, athletics, pecaksilat training, and dance practice, which enhanced their athletic skills and helped them to gain a higher long jump performance. An athlete's training background and experience are crucial in shaping their performance at amateur and elite levels. Behind every record-breaking or game-winning goal is a deep foundation of consistent training, evolving experience, and strategic growth. This athlete's training experience profoundly shapes the performance's physical, psychological, and strategic aspects. For coaches, trainers, and athletes alike, understanding the impact of training experience is essential to crafting effective, individualized training programs that promote success and longevity in sport.

This finding aligns with Zhang et al. (2025), who indicate that functional training can significantly enhance both physical and technical aspects of performance. However, the degree of improvement varies based on factors such as training duration, the athlete's prior experience, and the specific focus of the training regimen. Similarly, Smith et al. (2024)

Investigates the effects of periodized training loads over two months, comparing athletes following standard regimens to those on specialized programs. Findings indicate that tailored training loads can significantly enhance performance metrics in athletes. Townsend (2022) also explores how resistance training contributes to improvements in muscular strength, endurance, power, and hypertrophy. These adaptations are linked to enhanced athletic performance.

In conclusion, athletes with training experience often demonstrate improved performance in their respective sports due to physical and psychological factors. Effective training programs help athletes develop essential skills, enhance physical fitness such as strength, endurance, agility, and speed, and adapt to the demands of their sport. Moreover, experienced athletes exhibit better decision-making, resilience, and mental focus during competitions. Training experience also fosters consistency and discipline, which are critical for long-term athletic success. Athletes learn to overcome challenges, refine their techniques, and optimize performance through tailored and progressive training methods. In addition, the combination of experience and training often leads to higher self-confidence and a deeper understanding of their sport, contributing to their overall success.

Emerging Theme 2: Qualifications and Competition Experience

This emerging theme encompasses athletes' sports engagement and competition experience, which enhances their participation and skills in specialized sports events. As athletes

recognize the importance of staying engaged in sports competition, it can help strengthen athletic engagement and develop athletic skills. Competition is often described as the ultimate test of an athlete's abilities. Athletes who frequently compete learn to handle pressure, manage anxiety, and maintain focus despite external distractions.

All participants experienced a local level of competition, highlighting athletes' competition level, awards, sports competition, age disqualification, and sport determination. This indicates that all athletes experience school meet, zone meet, and division meet sports competitions with sports determination. Participants' competition experience serves as a great opportunity to do their best in competing in their specific sport event, even though they have only experienced competing at the local level. Their local competition experience serves as their heartbeat of grassroots sports, offering athletes a chance to test their skills, build confidence, and foster a deep connection with their sport.

The finding aligns with Kohmura (2020), who concluded that having experience in various sports does not adversely affect athletic performance or exercise habits, indicating that diverse competitive experiences may contribute positively to overall athletic development. Additionally, Puente et al. (2017) found that the study findings suggest that experienced players manage game intensity effectively, which may contribute to sustained performance levels throughout the match. However, Pifer et al. (2019) stated that experienced players contribute to better decision-making and composure during critical game moments.

Emerging Theme 3: Holistic Skills and Characteristics

The emerging theme reflects on athletes' holistic skills and characteristics, which include their strengths, weaknesses, technical skills, self-discipline, and emotional resilience. These technical skills are fundamental to athletic performance, influencing everything from talent identification to in-game execution. The participants demonstrated the different technical skills they used to participate in their specific event. Functional training, which focuses on exercises that mimic sport-specific movements, can improve athletes' physical and technical performance.

Out of 8 participants, approximately 4 expressed good holistic skills and characteristics in sports; some expressed their physical limitations in performing specific athletic sports. An athlete with strong holistic skills and characteristics demonstrates not only technical excellence and physical fitness but also mental resilience, tactical intelligence, emotional maturity, and strong commitment to continuous growth, making them a complete and adaptable performer both in and off the field. This finding aligns with Xiao et al. (2025), who concluded that functional training significantly improves physical and technical aspects across various sports. However, the degree of improvement varied depending on factors such as the duration of the training program and the athletes' prior experience. Another study by Thompson et al. (2022) examines how sports schools influence the holistic development of student-athletes, encompassing academic, athletic, psychosocial, and psychological domains. The study highlights positive outcomes, such as enhanced support services and training opportunities, and challenges like frequent school absences and the need for balanced development strategies.

However, an athlete with physical limitations demonstrates that excellence in sports is not solely defined by physical ability, but also by resilience, skill, adaptability, and determination. This is in line with the study of Allan et al. (2018). This study explores the personal narratives of 21 athletes with physical limitations, highlighting how their participation in parasport influences their identity, social inclusion, and personal development over time. The authors identify five distinct narrative types that reflect different developmental trajectories and meanings attributed to parasport participation.

Additionally, McLoughlin et al. (2017) provide valuable insights into the motivations, barriers, and facilitators influencing sport participation among elite athletes with physical disabilities. The findings underscore the importance of self-determination, social support, and accessible opportunities in fostering athletic engagement.

This finding highlights that athletes with strong technical skills but physical limitations demonstrate that physical challenges do not necessarily hinder athletic excellence. Their success highlights the importance of technique, strategy, and mental resilience over purely physical attributes. With the right support, adaptive training, and competitive opportunities, these athletes can perform at elite levels, inspiring a broader understanding of ability and redefining standards of success in sports.

Emerging Theme 4: Support System and Commitment

The participants underscore the importance of family support, mentorship and influence, encouragement, and sport commitment. The research supported the idea that receiving social support positively impacts athletic performance by enhancing self-confidence and reducing burnout. The study emphasizes the significance of both structural and functional support in sports settings (Freeman et al., 2021).

All participants emphasized the significant efforts and support of their parents, coaches, and friends in addressing challenges in engaging in sports events. Coaches are primarily responsible for developing athletes' technical, tactical, physical, and mental skills. Structured training, feedback, and goal setting help athletes improve performance. In contrast, parents provide crucial emotional backing, encouragement, unconditional love, and comfort after successes and failures, which sustains the athlete's motivation and well-being. Krommidas et al. (2022) state that supportive coaching and parental praise indirectly enhance positive outcomes through increased intrinsic motivation. These studies underscore the vital roles that coach mentorship and family support play in enhancing athletes' performance and well-being. Similarly, it was stated by Gao et al. (2023) that parental autonomy support significantly influences athletes' self-determined motivation, often more so than coaches. The study highlights the importance of parenting styles and behaviors in shaping young athletes' motivation. In addition, a study by Santos (2024) explores how coaches and parents interact and how these relationships affect youth athletes' development. It emphasizes that both parties play crucial roles in satisfying athletes' psychological needs and that collaboration is vital for positive athlete experiences.

In conclusion, athletes benefit significantly from the combined support of both coaches and parents. Positive coach-athlete relationships foster skill development, confidence, and

commitment, while supportive parental involvement helps maintain emotional balance and long-term sports engagement. However, it is crucial that both coaches and parents avoid overly controlling behaviors, as excessive pressure can lead to anxiety, burnout, and decreased athletic satisfaction. Ultimately, a collaborative approach between coaches and parents centered on the athlete's well-being and development creates the most favorable conditions for athletic and personal growth.

Emerging Theme 5: Lack of Training Resources

Limitation of access to sports equipment resources emerged as a central challenge for athletes to practice sports events, with approximately 7 out of 8 participants emphasizing the negative impact of a lack of sports equipment, limitation of access to sports equipment resources, and reliance on borrowed resources. These factors collectively hinder the quality and accessibility of sports training, making it difficult for students to engage in sports fully.

Many participants reported that while schools provided some resources, they only relied on the sports equipment in the school, and some of them relied on borrowing from friends because their parents could not provide them due to a lack of budget. This lack of quality resources prevents students from experiencing the best possible training and hinders their development in sports where proper equipment is crucial for skill acquisition and safety. In addition to the physical limitations of resources, financial constraints were a significant barrier.

Many students faced challenges purchasing necessary equipment, especially in sports with high material demands like Taekwondo or football. This inequality in access to resources further exacerbates the gap in skill development, particularly for students from lower-income backgrounds. The financial burden on students prevents some from fully participating in training or advancing as quickly as their peers with access to higher-quality gear. This disparity in access underscores the need for more financial support and resource allocation to ensure that all their students, whether poor or rich, have an equal opportunity to excel in their chosen sports.

These challenges resonate with the findings of Sanni et al. (2018), which found that poor athletic performance is often attributed to inadequate sports equipment and facilities. The research found that lacking functional and standard equipment hampers students' ability to develop essential skills and diminishes their overall sports experience. This deficiency affects performance and discourages student participation in sports activities.

Solomon (2020) added that financial constraints are a significant barrier to youth participation in organized sports. The study revealed that youth aged 6-18 from low-income households are six times more likely to quit sports due to financial costs compared to their peers from higher-income families. This disparity underscores the profound impact of economic factors on sustained engagement in sports programs.

Similarly, Mudd et al. (2024) found that disparities in access to quality sports facilities and equipment contribute significantly to unequal participation rates among students from different educational backgrounds. Addressing these resource gaps is essential for promoting equitable access to sports education and ensuring all students can benefit from sports participation.

The findings emphasize how resource limitations hinder the effectiveness and accessibility of sports events. Inadequate equipment, poor facilities, and financial constraints create disparities in student participation and skill development. Increased funding, school partnerships, and community support are essential to ensuring equitable access to quality training environments.

Findings

The study evaluated the relationship between physical attributes, squat ability, and long jump performance of Maguindanaon junior high school athletes. The key findings include that respondents' height, weight, and arm length are significantly associated. Furthermore, multiple regressions show that weight is the best predictor for long jump performance, and participants' level of squat ability shows a significant and very strong association with long jump performance.

The study also utilized a focus group interview with 8 participants who provided in-depth insights, which were analyzed using thematic analysis to uncover key themes related to the relationship between athletes' backgrounds. Most participants use time-intensive sports training to improve their athletic performance. Most participants experienced joined competition at the division meet level.

The findings on the students' other attributes in performing the long jump highlighted the five emerging themes: (1) Precision, Training and Performance, (2) Qualifications and Competition Experience, (3) Holistic Skills and Characteristics, (4) Support System and Commitment, and (5) Lack of Training Resources. These themes emphasize the importance of continuous athletic training to develop technical skills and improve athletic participation.

Conclusions

Based on the data collected and analyzed, the following are the results of the study:

Respondents' height, weight, and arm length showed a significant moderate association with long jump performance. Furthermore, multiple regressions indicated that weight was the best predictor of long jump performance. Respondents' level of squat ability showed a significant and very strong association with long jump performance.

The study revealed that athletes possess different training experiences to enhance their holistic athletic skills that can help them improve their competition level. Coach mentorship and parents' support are vital in enhancing athletes' performance and well-being. However, limited training resources can hinder the effectiveness and accessibility of sports events. Still, by resolving this lack, athletes' reliance on borrowing sports equipment at school and from their friends can be reduced.

Moreover, the researcher concluded that respondents' height, weight, and arm length showed a significant moderate association. However, among physical attributes, weight is the best predictor of long jump performance; squat ability had a significant and very strong association with long jump performance, and athletes emphasize the importance of continuous athletic training to develop technical skills and improve athlete sport participation.

Recommendations

From the findings of the study, the researcher recommends the following:

1. The physical education teachers may incorporate physical exercise and proper nutrition into their physical education subject to enhance students' learning engagement and participation.
2. The coaches may implement a long jump training program to improve students' athletic skills and squat ability, including strength and squat drills.
3. Develop strategies and long jump drills to maintain high levels of motivation and engagement among athletes, which are keys to successful training program implementation.
4. Encourage students to participate in a physical fitness program to enhance their learning engagement in exercise and a proper diet.
5. Ensure and motivate students to participate in a long jump training program and squat drills to improve their long jump performance.
6. Continuously monitor and evaluate the athlete's long jump training and performance to assess the effectiveness of the training program and improve the level of long jump performance.
7. Additional studies are needed to explore more training strategies for higher-level performance in the long jump. By implementing these recommendations, educators and policymakers can create more effective and engaging long jump training programs that promote holistic development and fitness among athletes.

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