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ROLE OF MOTOR ABILITY AND KINANTHROPOMETRIC VARIABLES IN FOOTBALL AND HANDBALL TEAMS

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ABSTRACT
Distinct positions in football and handball call for distinct physical traits and motor skills. Distinct positions, such as goalie and striker or defense, have distinct physical requirements. Coaches may make better selections for available jobs by studying kinanthropometric factors and motor ability. The result is more effective teams since players are assigned to certain responsibilities for which they are most equipped. A strong team capitalizes on its members' combined abilities while making up for those who may be lacking. Teams may better guarantee that their members' skills and personalities complement one another by taking motor ability and kinanthropometric factors into account during talent discovery and player selection. This chemistry boosts the team's cohesiveness, coordination, and performance, giving them an advantage in games. In today's ultra-competitive sports world, even the smallest of advantages may make a huge difference. Teams may learn a lot about their rivals by performing in-depth research on the significance of motor skills and kinanthropometric factors. With this information in hand, players and coaches may better devise tactics that play to their strengths while also taking advantage of the flaws of their opponents.

KEYWORDS: Motor Ability, Kinanthropometric Variables, Football And Handball Teams, physical requirements, Distinct positions

INTRODUCTION

Modern advances in physical education have broadened its scope beyond only sports. Bowling, walking, hiking, and frisbee are all great activities that may help kids build healthy habits they can take into adulthood if introduced at a young age. Yoga, deep breathing, and Tai chi are just a few of the stress-reduction methods that some educators are introducing to their classrooms. The ancient martial art of Tai Chi, which emphasizes calm, deliberate motions, has numerous useful applications for students. Tai chi has been demonstrated to improve stamina and strength in the muscles, as well as the heart and lungs. Benefits to mental health, focus, self-awareness, and disposition are further psychological advantages. It's great for classrooms with students of all ages and abilities since it requires little preparation and supplies. Including tai chi in a holistic learning body and mind unit is simple. It's possible that teaching pupils about sports from throughout the world may give them the push they need to become more physically active. Now more than ever, sports are an integral part of American culture. Its testing, competitive events, and ever-improving character have propelled it to the pinnacle of human civilisation. New information to improve human performance in terms of physical and psychological quality is reaching a plateau.

It's a million dollar debate among sports scientists whether or not to pursue the "skill barrier." In doing so, they have delved into the realm of psychology and identified a number of psychological factors that affect athletic performance.

MOTOR ABILITY

Fitness refers to the capacity to satisfy the physical demands of a job, whereas health refers to a state of full mental, bodily, and social well-being. When it comes to doing physical activities, accuracy, coordination, and efficiency are all dependent on motor ability, a foundational aspect of human movement. It provides the groundwork for developing skills in anything from the simplest of movements to the most complex of athletic achievements. This complex structure has several parts that all contribute to proficient movement. Agility stands out as the most important component of these motor skills. It incorporates the ability to make precise and rapid adjustments to one's course in response to both internal and external factors. This ability is particularly useful in sports where making quick changes to one's movement pattern is crucial, such as soccer, basketball, and tennis. In addition, agility pervades all aspect of our life, including how we handle stressful situations, deal with the unexpected, and overcome barriers.

The capacity to coordinate the actions of several muscles to produce precise and regulated motions is another crucial aspect of motor competence. It involves coordinating the contraction and relaxation of muscles across the body to carry out complex movements like writing, cycling, and dancing. Gymnastics and figure skating routines are known for their extraordinary elegance and accuracy, and this is all because to the athletes' remarkable synchronization. In addition to its importance in sports, coordination is crucial in any field that requires dexterity of the hands and fingers, such as medicine and music. One's capacity to maintain their balance while moving is crucial to their overall motor competence. It comprises the ability to resist pressures that might otherwise cause us to lose our balance, whether we are standing still or moving about. Whether it's balancing on one leg, striking a yoga posture, or tackling a mountainous trail, balance is essential. An sensitive sense of balance forms the cornerstone of performance excellence in sports like gymnastics, where defying gravity is vital, and in disciplines like martial arts, where keeping a centered stance is crucial. The capacity to generate force and power in movement relies on strength, a fundamental aspect of motor function. The ability to exert stress against an external resistance, such as when lifting weights or moving oneself through space, falls under this category. Weightlifting and powerlifting are two sports where participants test the limits of the human body and mind and where strength is typically equated with supremacy. The importance of strength, however, is not limited to the realm of athletics; it permeates all aspects of life, from carrying groceries and children to getting out of a chair. A solid strong base allows people to take on the physical world with gusto and assurance.

Ability to keep going when things become tough is what we mean when we talk about endurance, and it's a crucial part of any set of motor skills. It represents the capacity

of the circulatory and musculoskeletal systems to work well, preventing exhaustion and allowing for sustained levels of performance. This aspect of motor skill is particularly important in endurance sports like long-distance running, cycling, and swimming, where it serves as a clear dividing line between the best and the rest of the competition. Furthermore, endurance is crucial in a wide variety of contexts, from protracted physical exertion to focused mental effort. It's proof that the human body can change and adapt to its environment in ways that enable us to do extraordinary things. Flexibility is a dynamic aspect of motor ability that determines our capacity for flexible and fluid movement by encompassing the range of motion around joints. Incorporating the pliability of muscles, tendons, and ligaments, it affects how far we can stretch, bend, and twist in different directions. The ability to assume and change into a wide variety of postures and positions is fundamental to many physical practices, including yoga, gymnastics, and dance. Furthermore, flexibility in everyday life allows us to freely interact with our surroundings, whether that be to reach for items on high shelves or to tie shoelaces without difficulty. The time it takes to process a stimuli and begin acting in response is known as reaction time, and it is an often-overlooked component of motor skill. In sports, where split-second judgments may determine the result, and in daily situations, where quick reflexes can prevent possible threats, this ability is crucial. Having a quick response time is vital in sports like boxing and motor racing, where making split-second judgments may be the difference between win and disaster. In conclusion, motor ability is the foundation of human movement, including a wide range of skills that allow us to engage with the material environment. Balance provides a firm foundation for our poise and steadiness while also allowing us to move with more ease and accuracy. Agility allows us to swiftly and precisely negotiate challenging circumstances. Strength is the foundation of our power and force output, while endurance allows for continuous effort throughout time. The ability to respond quickly and effectively to external stimuli depends on both our flexibility and our reaction time. Our ability to thrive in a wide range of tasks, from the everyday to the remarkable, is predicated on our motor skills, which are a complex and interdependent aspect of our physical capability. One's ability to move through the environment with poise, accuracy, and assurance may be developed to their fullest extent via practice and training. Strength, speed, stamina, and flexibility are the four cornerstones of basic fitness. However, the definition of fitness as established by exercise experts includes the following nine elements:

Strength

The force that may be generated by tightening muscles against an opposing force (such as when lifting or holding something or someone). The importance of strength training in today's sporting programs is evident throughout the nation and across gender lines. In order to better prepare for the competitive demands of the sports season, athletes now routinely engage in weightlifting and other forms of conditioning.

Importance of Strength

Muscular strength and conditioning have been linked to improved sporting performance. The body's 600+ skeletal muscles primarily serve to contract in order to move various bodily components. Muscle is the only source of motion. You can run faster, leap higher, throw farther, and punch harder if your muscles are stronger and your contractions are more powerful in comparison to your own bodyweight. It really is that easy! Having a solid foundation of physical strength is also crucial for being safe on the field. The foundation for all other forms of strength rests on maximum strength. Having speed, power, reaction ability, etc., are all things I will emphasize often. Even with all of these positive characteristics of strength, you won't go very far or get much done quickly without a sufficient amount of raw horsepower in your engine. Horsepower and peak strength are interchangeable terms here. Though only power lifters are judged on their absolute maximum strength, all athletes benefit from building this strength to better hone their explosive power, quick reactions, stamina, and other skills. As a result, it's crucial to concurrently improve both your absolute muscle strength and the "functional" or "sport-specific" strength you'll need to excel in your chosen activity. There are two distinct muscle movements that demonstrate extreme strength:

1. Concentric Strength: muscle shortening under strain; the capacity to overcome resistance via this process. Concentric strength is used in activities such as lifting a weight.

2. Eccentric Strength: muscle lengthening as a result of giving in to pressure. Most people have 30-50% higher eccentric strength than concentric strength, meaning they can lower far more weight safely than they can lift.

Power

Rapid bursts of movement characterized by maximal muscle contraction at the exact right moment. While strength is the maximum force that can be applied against a load, power is related to the rate at which this force can be applied, such as in a sprit start or a vertical leap. Weight training, throwing objects like medicine balls, tempo runs, and plyometrics (deep jumps and bounds) are all effective ways to build power. Muscle Power is a crucial part of overall fitness and is required for competition in a wide variety of sports. One of the most crucial physical characteristics for certain sports, including weightlifting, boxing, and weight throwing. Power is a crucial component of fitness in many other sports as well, including football. In a poll of the most physically demanding sports, Olympic weightlifting easily comes out on top. Check out this alternative rating of speed and power in sports.

Agility

Zing zag running refers to the ability to conduct a series of powerful explosive movements in fast succession while changing directions. Agility is the rapid, efficient, and controlled movement in any direction and change of body posture. Reflexes, coordination, balance, quickness, and the ability to adapt to new circumstances are all essential. When you're agile, you're able to adapt to your environment by sensing and reacting accordingly, all while keeping your equilibrium and composure. You're

positioning yourself to make the next play, whether it's a catch or a tackle. You're positioning your body and sporting gear so that you can take the following step with maximum efficiency. A high level of agility is essential for success in a wide variety of sports and other physical endeavors. Consider all the sports that call on quick reflexes and agility. Quick reactions are essential in team sports because you must react to the actions of your teammates and the ball.

Individual sports like tennis, handball, squash, and table tennis need fast reactions to the location of the ball. You need to be quick on your feet to master the art of surfing, skiing, or snowboarding, since the water and snow surfaces are constantly shifting. The shuttle run is a common activity used to improve sports agility and a common measure of general agility. In this game, players dash from one marker to another, make a rapid turn, and then return to their starting position. The United States Military Academy employs a shuttle run exam. The 5-10-5 shuttle run is used as an agility test and workout in the National Football League. A shuttle run and dodging four cones are two of the components of this running event. Since it has been in use for so long, standards and a grading system have developed.

Balance

The mastery of one's own body in space, whether at rest (as in a handstand) or in motion (as in a gymnastic performance). To maintain equilibrium, one must be able to counteract any forces that can threaten it. Balance exists, at least somewhat, in the majority of healthy persons. Observing a baby take his or her first steps is proof of this. motions ranging from merely standing on one leg to complex, dynamic motions during the performance of a particular sports talent provide more proof of balance. When live, breathing barriers are included into the equation, the discussion of balance takes on a whole new dimension. The football running back, for instance, has to show off his stability as he rebounds off the defensive line. Or watch a point guard in a basketball game as she deftly evades defenders on her approach to the basket without losing her balance. There are many different kinds of balance. Stability is the dividing line between being good in a sport and being great at that talent. The degree to which an individual can maintain equilibrium in the face of disturbances is indicative of their stability. In a nutshell, your response to the question "How balanced are you?" describes your level of stability. Competent athletes may use certain strategies to strengthen their foundation and make them almost impervious to external stimuli.

Dynamic stability, often known as stability when in motion, is often the key to the incredible athletic highlights seen on television. On the football field, the two concepts of balance and stability stand in stark contrast to one another. A good punter may elevate high on one leg and land easily on the same leg between 50 and 60 yards after receiving the snap. When a defensive back slams into the punter when he's in the air or standing on one leg, the punter's lack of stability becomes obvious. Punters often end up flattened because they try to achieve balance at the expense of stability. A 290-pound offensive lineman in an athletic stance can withstand the maximum pushing of a 400-pound

defensive lineman because of his superior balance and stability. The catcher in baseball and the post player in basketball are two other sports that benefit from a well-rounded set of balance and stability skills. Balance and stability are prerequisites for success in both roles. However, stability and balance are crucial for the catcher in baseball, and the finest post players in basketball are cognizant of the importance of these qualities as well.

Flexibility

The absence of fat or muscle that would otherwise limit one's range of motion (as while attempting a leg split, for example). Flexibility training should be a frequent element of your customers' workout regimens. Aerobic exercise, muscle fitness, and athletic performance may all benefit from increased flexibility. Research shows that persons who regularly engage in flexibility training have a lower risk of injury because they are better able to move freely throughout a greater range of motion. The only time this isn't the case is if the range of motion (ROM) is excessive or unstable, both of which might raise the risk of injury. Flexibility training's many benefits include helping people connect with their bodies. It's an exercise in active relaxation that has been shown to hasten the physical and mental healing processes.

Flexibility Techniques

Overloading the muscle with flexibility exercise is important to develop or recover muscular ROM. The range of motion (ROM) of a joint may be increased by safely and effectively lengthening the muscle and surrounding connective tissue. There are two primary ways to improve flexibility (static and dynamic), but regardless of the approach, the benefits will be maximized after a complete warm-up.

Static Stretching

This kind of flexibility training is stretching a targeted joint or combination of joints to its range of motion (ROM), holding the stretch for at least 20 seconds each time, and then repeating the process again or thrice. To increase a joint's range of motion (ROM), static stretching works to counteract the stretch response (the muscle's reflexive tightening when stretched, which relaxes after about 20 seconds). To do this, hold the stretch for a short period of time and be careful not to overstretch the muscle.

Dynamic Stretching

This approach to flexibility training involves progressive, fluid motion over a joint's complete range of motion. In dynamic stretching, the agonist muscle contracts as the antagonist muscle (the opposing muscle) stretches, a process known as reciprocal inhibition. Dynamic stretching, when done properly, helps to loosen tight muscles, keep you as flexible as you already are, and warm up your joints. The workout starts off easy and builds in intensity over time. If you want to get the most out of your stretching routine, try doing it before dynamic activities like tennis or hiking.

Muscle Endurance

Muscular endurance is crucial for athletes and other persons who need to keep going for lengthy periods of time. How well developed your slow twitch muscle fibers are will determine your muscular endurance. If you're unfamiliar with the term "slow twitch muscle fibers," allow me to fill you in. You have both slow

twitch and quick twitch muscle fibers in your body. Although slow twitch muscle fibers lack the strength of their rapid twitch counterparts, they are better suited to maintaining an effort for longer periods of time. Fast twitch muscle fibers have a high peak force and short duration of action. This means that slow twitch muscles are associated with stamina and rapid twitch muscles with power. Muscular endurance is something to keep in mind if you play sports or participate in any kind of physical activity that lasts for an extended period of time. Hockey, football, tennis, etc. are all examples of popular spectator sports. Cross-country running, which requires relatively little physical strength or flexibility but requires a great deal of muscular endurance, is another exercise that relies heavily on this quality of the human body. Participating in any kind of cardiovascular exercise, including jogging, bicycling, or playing sports, is the greatest approach to increase muscle endurance. To some extent, maintaining your health and strengthening your leg muscles may be accomplished just by walking. Strength and stamina in the upper body may be enhanced by doing bodyweight exercises such as chin-ups, push-ups, triceps dips, etc.

Strength Endurance

"Strength endurance is the specific form of strength displayed in activities which require a relatively long duration of muscle tension with minimal decrease in efficiency" (Stiff, 2000). This refers to a muscle's capacity to perform a maximum contraction repeatedly (for example, continuous explosive rebounding throughout an entire basketball game). From the rower on the water to the swimmer in the pool to the wrestler on the mat, there is a wide variety of sports that need strength and endurance. Dynamic vs static strength versus general versus local endurance are only a few ways in which these instances might be classified. However, competition of any kind requires your very best effort during the whole contest. The winner is not always the strongest athlete, but rather the one who can maintain the most amount of force for the duration of the exercise. Therefore, it is advantageous for the athlete to train all kinds of muscle fibers. Fast twitch muscle fibers are responsible for the bulk of the power generated in explosive sports like running and weightlifting. Long-distance aerobic races rely mostly on slow twitch fibers. Strength endurance is developed by combining and exercising these two kinds of fibers over a wide range of velocities and angles.

Dynamic and static strength endurance

Training regimens may also help enhance another component of this strength continuum: static and dynamic strength endurance. The athletic motions and muscle strain during these motions are what set these two types of strength endurance apart from one another. Therefore, endurance may be broken down into two parts: the amount of time spent under high or moderate muscular strain. Both dynamic and static strength endurance are crucial components of physical fitness, with their own unique role to play and a mutual influence on one another. Muscular endurance, or dynamic strength endurance, is the ability to keep contracting your muscles for an extended amount of time, which is useful in situations when you need to exercise your

muscles repeatedly. It's a great example of the muscles' capacity to constantly apply power against resistance without tiring too quickly. This quality of physical stamina is crucial in a wide range of sports, including long-distance running, cycling, and swimming. Consistently delivering forceful strokes is crucial for success in sports like tennis, which include repeated actions. In addition, dynamic strength endurance is essential for daily life, as it ensures effectiveness in everything from grocery shopping to housework. Static strength endurance, on the other hand, involves isometric contractions and places more emphasis on the capacity to keep a posture or a resistance stable for longer periods of time. Static endurance depends on the muscles' ability to stay constricted without any discernible change in length, in contrast to dynamic endurance, which relies on the muscles' ability to repeatedly lengthen and shorten. This kind of stamina comes in handy while doing things that need you to stay in one place. Examples abound in activities like yoga and rock climbing, where participants must maintain static postures while assuming and holding a variety of challenging stances. Static strength endurance is also important in occupations like construction and fire fighting where stability and stamina are required to hold or support weights for lengthy periods of time. Although unique, dynamic and static strength endurance may and can work together to provide additional benefits. Athletes and fitness enthusiasts who are after a well-rounded physical capability are aware of the interdependence of these two factors. By strengthening and stretching the muscle fibers in preparation for prolonged use, dynamic exercise increases muscular endurance. Static exercises develop the capacity to retain a posture or resist external pressures, which is crucial for many everyday activities. By combining these two types of strength and stamina, one may develop a comprehensive physical competence that is not limited to any one activity.

Co-ordination

The skill of coordinating all those factors so that your actions have maximum impact. Sporting abilities and activities rely on fluid, efficient movement patterns, and this is what we mean when we talk about body coordination as a performance-related fitness component. Your proficiency in carrying out these sub-skills is reliant on your current learning level. The ability to move fluidly is crucial for doing routine activities. As an athlete, your success or failure depends on how rapidly you can learn new techniques and maneuvers. You may easily outpace the competition if you know how to learn quickly.

The subject of how to build strength for the sake of fitness and sports merits considerable thought. How do you bulk up? The strategy chosen must be tailored to the individual's level of experience and education. In order to build strength, a beginner should focus on doing a small number of multi-joint exercises. Power cleans, squats, dead lifts, presses, and bench presses are all encouraged. Almost every joint in your body that can move will benefit from these exercises, whether you're looking to build dynamic or static strength. They also allow you to increase your strength in a wide variety of motions, from the sluggish dead lift to the quick

power clean. After a newbie has trained for a while and built up some basic strength, they will go on to the intermediate level. The intermediate trainee has a solid enough strength base to benefit from adding new exercises, such as those using a wider range of barbell motions, bodyweight gymnastic aspects (rope climbs, pull-ups, etc.), and other resisted activities (sled pulls, weighted throws, etc.). Periodic changes in training intensity and duration will also be beneficial. Even the most dedicated exercisers will never advance their strength training beyond the intermediate level. Strength training beyond this point is outside the scope of this essay since it is certain to be linked to some kind of sport or performance objective using the barbell sports.

CONCLUSION

As a wide concept, fitness is related to physical education but also encompasses mental, social, and moral well-being. He's especially interested in exploring the intersection between physical health and athletic ability. Systematic and frequent training regimens tailored to a person's age may help them achieve and maintain a healthy level of physical fitness. Each person is different and grows at their own rate; even among people of the same age and gender, there is a wide range of ages and fitness levels, therefore the principle of individuals must be taken into account when designing a fitness training program. Therefore, it is essential that physical fitness training programs be designed with the notion of individual uniqueness in mind. Because of the correlation between sports training and aging, it's important to strike a healthy balance between the two.

REFERENCES

1. Dey, S. K., Kar, N., & Debray, P. (2010). Anthropometric, motor ability and physiological profiles of Indian national club footballers: a comparative study. South African Journal for research in sport, physical Education and Recreation, 32(1), 43-56.

2. Dhonde S. P. (2011), "A Comparative Study of Physical Fitness of Indoor and Outdoor Players", International Journal of Health, Physical Education and Computer Science in Sports, Vol.2, No.1, pp 78-78.

3. Duncan, M. J., Woodfield, L., & Al-Nakeeb, Y. (2006). Anthropometric and physiological characteristics of junior elite volleyball players. British Journal of Sports Medicine, 40(7), 649-651.

4. Eckhardt, C. L., Adair, L. S., Caballero, B., Avila, J., Kon, I. Y., Wang, J., & Popkin, B. M. (2003). Estimating Body Fat from Anthropometry and Isotopic Dilution: A Four Country Comparison. Obesity, 11(12), 1553-1562.

5. Elferink-Gemser, M., Visscher, C., Lemmink, K., & Mulder, T. (2004). Relation between multidimensional performance characteristics and level of performance in talented youth field hockey players. Journal of Sports Sciences, 22(11-12), 1053-1063.

6. Ferreira, M. A., & Spamer, E. J. (2010). Biomechanical, anthropometrical and physical profile of elite university netball players and the relationship to musculoskeletal injuries. South African Journal for Research in Sport, Physical Education and Recreation, 32(1), 57-67.

7. Garay, D., A.L., Levine, L. and Carter, J.E.L. (1974): Genetic and Anthropological Studies of Olympic Athletes. Academic Press, New York 1974:Pp: 27-36.

8. Gaurav, V., & Singh, S. (2010). Anthropometric characteristics, somatotyping and body composition of volleyball and basketball players. Journal of Physical Education and Sport Management, 1(3), 28-32.
9. Gaurav, V., & Singh, S. (2010). Anthropometric characteristics, somatotyping and body composition of volleyball and basketball players. Journal of Physical Education and Sport Management, 1(3), 28-32.
10. Hägglund, M., Waldén, M., Bahr, R., & Ekstrand, J. (2005). Methods for epidemiological study of injuries to professional football players: developing the UEFA model. British journal of sports medicine, 39(6), 340-346.