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Motor Tests in Primary and Secondary School: Exploring Basic Motor Skills in Children

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Abstract: The foundations for an adult's authentic and durable dedication in sport or in any kind of motor activity are laid by providing a good quality physical education. This means that the choice of learning experiences to be imparted to the child throughout his or her school curriculum, starting from kindergarten, is important and must be not only planned, inclusive and progressive but also, in some way, personalised. In other words, lessons must respond to the children's needs in order to enhance their motor skills and abilities and their social skills and to give an input on how to lead a physically active life, thus keeping basic motor skills alive. The research involved the administration of the Mobak 5-6 Test on a convenience sample of 31 children (f = 12, m = 19), aged 10-12 years, in order to analyse the basic motor skills of a group of young athletes. An individual qualitative and quantitative motor repertoire must therefore be built, allowing the child to be able to take the opportunities offered to him or her in both curricular and extracurricular scholastic field. These motor skills, with which the child is provided, will also be useful for cultivating correct physical activity habits in later life and must be formed through systematic evaluation of the development of his or her motor skills.

Key words: Motor skills, Mobak, motor evaluation.

1. Introduction

The need to move derives from the necessity to develop and maintain the functionality of our organism because movement is considered an activator of our organ systems. Moving is an action that involves the development of personal motor skills, but also of those that are considered motor abilities, therefore it is fundamental to know accurately all the evolutionary phases of the human being and the rules of physiological growth, both to bring suitable didactic interventions that take into account the specific age of the subject and to educate him/her in the best possible way from a bio-psycho-social point of view. From the earliest years of life, from the motor and functional aspect, the child will interact with the surrounding environment through what is spontaneous play and deliberate practice, increasing new gestures, skills or competences, during the "sensitive" phases. The value attributed to play and to motor and sports activities creates fertile land for the enhancement of corporeity, which is useful for accessing to motor knowledge, while at the same time opening to both didactic and teaching perspectives. "The child who does not play is not a child, but the adult who does not play has lost forever the child within him", Pisacane et al. [1] understand well how fundamental play is, not only for childhood, or more accurately the developmental age, but also as a stimulus for an active lifestyle.

According to the scientific literature, motor development is enhanced through a lifelong pathway that will be non-linear in the interaction between individual, task and environment [2] and will be characterised by progressive transformations in motor behaviour.

What is important to emphasise is that motor development is linked to motor learning and can be described as that set of cycles that are implemented through exercise or experience that allows one to

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perform with more skill [3].

Thus, learning results in permanent changes generated by several processes enacted in the progressive redefinition of motor skills, which involve motor tasks designed to a predetermined goal that involves the voluntary movements of one or more body parts, activated to complete movement aimed at a specific goal [2].

Another way to define abilities and, consequently, the characteristics themselves is related to the observation of the environment where the motor activity is performed. Indeed, every motor task, whatever it may be, takes place in a specific environment—it may be the gym, the beach, the sea, the park—and the type of environmental context influences its execution. In fact, the environment stimulates, produces conditioning, influences both the type of ability and the attitude of individuals who have to be able to adapt the performance. So, since the environment has a considerable impact, it is possible to think in terms of:

(1) *Open skill*, which is performed in unpredictable, changeable environments, where stimuli are numerous and important and therefore capable of consistently influencing the ability, making it impossible to program the movement, which has to be somehow improvised;

(2) *Closed skill*, which, on the other hand, belongs to smaller, less conditioning spaces, therefore, to predictable environments that allow early planning the movement and executing it without taking into account sudden changes in the context and without time pressure;

This difference also entails a different type of motor process because, in the case of closed skills—considering swimming in the pool, then in the pool, with lane for example—it is very simple to use the acquired automatic habits, while for open skills everything changes: considering football, it is important *to perceive* the environment around oneself, *to recognise* the situation in which to move around, *to make* decisions that adapt themselves to the environment and, above all, *to perform* the gesture in the right time just because the environment changes and it is necessary to capture the moment. Let us think in terms of sport activities such as team games where there are teammates, opponents, an implement—which can be a ball, for example—all in constant motion: it is necessary to adapt and react in a short time. Individual sports, without opponents and in controlled environments, such as archery, are very different. However, also in this case, like the previous distinction between *open* and *closed skills*, there is not always such a clear difference: they represent two extremes in which the conditions of the execution of the abilities change according to the predictability of the environment as anticipated by Parlebas [4] and defined *Domestication et sauvagerie*.

In terms of performance, on the other hand, movement can be assessed as control of the movement itself, that is the motor competence achieved. This competence can also be achieved through an automatic unfolding, as an instinctive response (reflex arc M1), and not only as a reasoned reflex (circuit M2) in which the hippocampus springs into action and the movement is contextualised. Whenever movement sequences have been consciously and competently acquired it deals with motor learning: the more advanced the learning, the more effective the performance. Performance is therefore conditioned by learning which, in turn, is determined by individual characteristics, whether physical or cognitive such as the ability to assimilate, apply, abstract performance feedback. Moreover, and this is very perceivable, learning is not assessed on the individual performance, on the level achieved by a particular performance, but also on the stability of results even when the context changes and at different times. There is a tendency to statistically eliminate, we might say almost guessed and *random* results and instead, it is considered that if a movement has been acquired, it has to be always performed on average at the same level.

Motor performance is also determined by motivation, physical condition, stress and strain that the subject has at the moment he or she performs the movement. So when we talk about structured learning we are referring to the triangle environment-model-motivation. All individuals search for a motor mechanism that knows how to perform in the most economical, precise and repeatable way: there is a tendency towards the creation of an automatic form, of an implicit learning, because it is closely linked to the individual and activated in a totally unconscious manner.

This form of implicit learning, based on direct experience, is the "improvement of a subject's ability to provide a correct response as a result of repeated attempts" [5]. In addition to implicit learning, there is also a more complex form of learning, which uses higher cognitive mechanisms and is based, instead, on abstraction and neuronal connection.

From a pedagogical point of view, what is interesting is the contribution that didactics can make in promoting learning. The teacher must preserve the overview, the global image of the movement, and enable the learner to develop and then execute the conceptual model produced. A considerable amount of information must be managed and exploited to enhance motor learning and refine the execution of a movement, that is the performance [6].

2. Materials and Methods

2.1 Research Hypotheses

The slow growth of women's football in our country, also highlighted by the failure to qualify for the round of 16 of the European Championships 2022, led us to reflect on how much more needs to be done, starting with the youngest athletes. For this reason, the analysis on the importance of the play in the age of development and on the fundamental psychomotor phases is useful to better understand the gaze with which the educator/coach has to approach their athletes: with a critical eye and paying attention to every detail. As football is an "open skills" sport, in this constant changeability, motor skills could make a strong contribution to a suitable training of female football player during the developmental years. For this reason, the following research work supposed:

- firstly, that the Mobak 5-6 test could be used not only in the school context, but also in football schools, considering it an excellent and effective tool for assessing the suitable development of basic motor skills;
- secondly, that through the evaluation of the Mobak 5-6 test, progress can be tracked and the gap in skill development between female and male football players, due to a late start by girls in football, can be bridged, allowing for homogenous growth without differences between the two sexes.

The check of these hypotheses will provide the expert with more information on the athletes before him or her, allowing for the progressive improvement of the athletes in terms of motor skills, by planning a specific course with multi-purpose drills and games.

2.2 Aim

Starting from this, two research objectives have been identified:

- to motivate coaches/educators to use the Mobak test within football schools to monitor their athletes and be able to plan appropriate sessions;
- to stimulate the growth of women's football by using the Mobak 5-6 test to verify which motor skills the athletes need to improve on in order to enhance their development, showing a greater positive increase in post-test.

2.3 Sample

The study involved a convenience sample of 31 children aged between 10 and 12 years (f = 12, m = 19) attending classes IV and V of primary school and class I of secondary school.

2.4 Tools

Within this framework, we can consider the Mobak

5-6 an efficient tool. This easy-to-apply, quick and inexpensive battery is a practical tool for the didactic assessment of basic motor skills [7].

The Mobak test is divided into two main competence areas: control of objects (move something) and body in movement (move) [8]. Each area includes several criterion tests that can be traced back to different motor patterns and execution variations, in which a score is given that allows an efficient and objective assessment. Therefore, the test is assessed by means of a "dichotomous codification" (0 to 2), such as passed or failed, in relation to certain standardised criteria [9].

This type of assessment allows observing which task was passed or failed by the child and also reveals where intervention is needed.

3. Results

For this study, a descriptive statistic, with minimum and maximum values, mean and standard deviation, and an ANOVA (analysis of variance) for comparing the mean values of the different variables analysed, between different age groups, were carried out. The data were collected and contained in the evaluation table arranged in the handbook of the two Mobak authors, were computerised and organised on Excel and subsequently transferred to SPSS (Statistical Package for Social Sciences). By calculating the mean of the "move something" and "move" of the entire group of participants in both the pre- and post-test, it was possible to note the overall sum of the individual exercises of the two categories, comparing the variables in both the pre- and post-test.

An increase of 12.65% emerged, albeit minimal, between the pre- and the post-test in the area of "move something"; while in the area of "move" there was an increase of 9.54%; in the area of "move something" there was an increase of 12.20%, while in "move" there was an increase of 9.72%. It is assumed that with a

Table 1 Descriptive statistics.

	Gender	*N*	Mean	Std. deviation
sumT0_Movesomething	F	12	4.67	1.15
	M	19	5.05	1.54
	total	31	4.90	1.40
meanT0_Movesomething	F	12	1.17	0.29
	M	19	1.26	0.39
	total	31	1.23	0.35
sumT0_Move	F	12	1.00	1.00
	M	19	1.31	1.31
	total	31	1.20	1.20
MeanT0_move	F	12	0.25	0.07
	M	19	0.33	0.08
	total	31	0.30	0.05
sumT1_Movesomething	F	12	1.07	0.31
	M	19	1.38	0.32
	total	31	1.26	0.23
meanT1_Movesomething	F	12	0.27	0.08
	M	19	0.35	0.08
	total	31	0.32	0.06
sumT1_Move	F	12	0.90	0.26
	M	19	1.27	0.29
	total	31	1.14	0.20
MeanT1_move	F	12	0.23	0.07
	M	19	0.32	0.07
	total	31	0.28	0.05

medium-long period of training, the results for the entire group would have been greater in percentage terms (Table 1).

Dividing the group according to gender, a greater percentage increase in females than males has been proved, respectively in the sum of "move something" there was an increase of 13.50% and an increase of 11.48%; while in "move" there was an increase of 18.19% for females and 4.36% in males; in relation to the mean, the increase of females in "move something" is 13.67% while in males it is 11.90%; in "move", females had an increase of 17.39% and males 9.70%. The ANOVA, in this first analysis, showed a not enough considerable difference ($p < 0.05$) between different gender groups in the dimension of "Move". Instead, in relation to the amount of the mean values of the items connected to the section "Move something", there were no significant differences between the groups, consistent with what was hypothesised in relation to the treatment methodology. However, also for this category, the amount of the mean values is slightly higher for the female gender in the transition from pre- to post-test.

4. Discussion and Conclusions

Considering the main objective of this study, that is, to provide useful tools and knowledge to support the development of female football and its practice from a young age, the difference in results in the two genders, as already mentioned, would represent a confirmation of the formulated hypotheses. However, the observed values, which are significant but not enough, also represent the limitation of this research work considering the short administration time between the pre- and post-test. Also the initiative reported on the Mobak website, namely the BMC-EU (basic motor competencies in Europe), focuses on assessing basic motor skills in all European nations taking part in the Erasmus+ project. It will support suitable guidelines for the promotion of motor activity, with the purpose to receive information on the learning and development of children's basic motor skills from all European project countries.

This will allow the dissemination of the concept of "practising sport" as a daily part of every single person's life [10], also paying constant attention to the growth of girls in the world of football, allowing the spread of data both at a European level and in a more restricted, regional or provincial dimension, having an overview and constantly comparing it both at a national and European level, thus being able to understand when it is necessary to intervene in order to improve weaknesses in any motor skill while also trying to reduce the gap between the development of Italian and European women's football. In conclusion, the results of this study, although not significant, provide encouraging data that suggest spread of the experimentation to a larger sample and over a longer period of time, so as to increase motor proposals.

Author Contributions

Lucia Pallonetto Ph.D. student in Didactic Corporealities, technology and Inclusion at the Department of Human, Philosophical and Educational Sciences, University of Salerno, she edits the paragraphs: "1. Introduction"; "2. Materials and Methods".

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