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IMPACT OF MENTAL SKILLS ON MOTOR LEARNING IN MOROCCAN HIGH SCHOOL STUDENTS

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Abstract:

The issue of motor learning and underlying factors are widely debated. This work has a double aim, to bring out the profile of mental skills and to evaluate their correlation with performance in sport and physical education in Moroccan secondary school students. The study was based on a sample of 202 Moroccan students. We used the test Mental Skills Assessment Tool (OMSAT-3) to assess mental skills.

According to the results, the OMSAT-3 displayed a very satisfactory internal consistency, which confirms the reliability of the measurement tool. Moreover, students displayed low to moderate levels of mental skills. The statistical analysis showed that the profile of mental skills is significantly different between males and females. Also, the students of more than 17 years old had profiles different from those of 17 years old and less. Furthermore, the sport performance was positively associated with goal setting, commitment, relaxation, activation, mental imagery, mental practice and planning.

In conclusion, this work showed that mental skills influence significantly the performance of students and consequently their learning. Hard work should be done to improve these skills in high school students.

Keywords: mental skills, motor learning, high school, students, Morocco

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Introduction

Mental skills are a set of processes that allow to control and direct thoughts, feelings and learning-required emotions (Smith, 1993).Durand-Bush and al. classified mental skills in 2001 as follows:

Basic skills contain:

- Goal setting: involves the development of an action plan designed to motivate and guide a person or group toward a goal (Burton, 1993; Locke and Latham, 1985).
- Commitment: related to determination, perseverance and task intensity that the student devotes to carry out his goals (Orlick, 1992).
- Self-confidence: is one's belief that he is capable to carry out his goals (Orlick, 1992; Vealey, 1986).

Psychosomatic skills contain:

- Stress reactions: are the physiological responses to different kinds of pressure (environmental, internal…) (Martens, 1977).
- Fear control: is the ability to get used to situations or performance elements which cause fear or anxiety (Rotellaand Lerner, 1993).
- Relaxation: is a technique often used by people to reduce excitation (Zaichkowsky and Takenaka, 1993).
- Activation: is the ability to increase the level of energy (Zaichkowsky and Takenaka, 1993).

Cognitive skills contain:

- Concentration: is the ability to direct and maintain one's attention to the pertinent elements of performance (Orlick, 1992).
- Distraction control: is the ability to concentrate again after being confronted with external or internal distractions (Orlick, 1992).
- Imagery: consists in creating using clear images of the performance (Murphy and Joudy 1992)
- Mental practice: consists in practicing a physical skill using mental images which associate the different meanings (Murphy and Joudy 1992).
- Competition planning: conceive and use plans to guide thoughts, emotions and acts before, during and after the competitions (Orlick and Partington 1988).

Learning could not be observed directly but analysed from the observation of behaviour (Magill 1985). Indeed, learning is the process of one's internal state change

that results from practice or experience and that could be interpreted by the analysis of performance (Halletand al; 1996).

In this context, the present work aimed to find out the level of mental skills and to evaluate their correlation with motor learning in a group of Moroccan high school students.

Methodology

The study was carried out in January and February 2015 in a Moroccan high school situated in Sidi Slimane province that belongs to Gharb-Chrarda-Bnihsen region in the centre of Morocco. The studied classes were chosen at random.

The sample contained 202 high school students (100 boys and 102 girls) whose mean age is 16.82 ± 1.25 years old.

Measure of mental skills

We used the fresh version 3 of the Ottawa Mental Skills Assessment Tool (OMSAT-3) (Durand-Bush and al. 2001). It evaluates twelve mental skills ranked by the authors (Durand-Bush and al. 2001) as follows: basic skills (goal setting, self-confidence and commitment), psychosomatic skills (stress reaction, fear control, relaxation and activation) and cognitive skills (concentration, distractions control, imagery, mental practice, competition planning). The scores of the 12 scales correspond to the means of self-evaluation of 4 affirmations, in a Likert scale of 7 choices (from totally disagree to completely agree).

Measure of sport performance

In order to evaluate the performance, we chose an individual sport discipline which is the high jump. Students were subjected to 12 learning sessions during which they learn the technique for carrying out the high. Having all the same chance to do this exercise, students should individually carry out a jump in public.

Statistical analysis

- Internal consistency: it was assessed using the alpha Cronbach coefficient.
- Descriptive statistics: the results related to the scales scores were presented as mean ± standard deviation.
- Analytic statistics: in order to compare the means of scores according to the sex and according to the age, we used the t-student test. Moreover, the Pearson correlation coefficient allowed us to evaluate the association between the mental skills and the sport performance.

Results

Preliminary analysis

The calculation of Cronbach's alpha (1951) for the three families of mental skills: basic skills, psychosomatic skills and cognitive skills, gave 0.83, 0.61 and 0.76 respectively. The Cronbach's alpha of the whole OMSAT-3 test was 0.87. These results imply that the internal consistency is very satisfactory (Nunally, 1978).

Profile of metal skills and sport performance

Mental skills

The results of the evaluation of the twelve mental skills, using OMSAT-3, are displayed in figure 1.

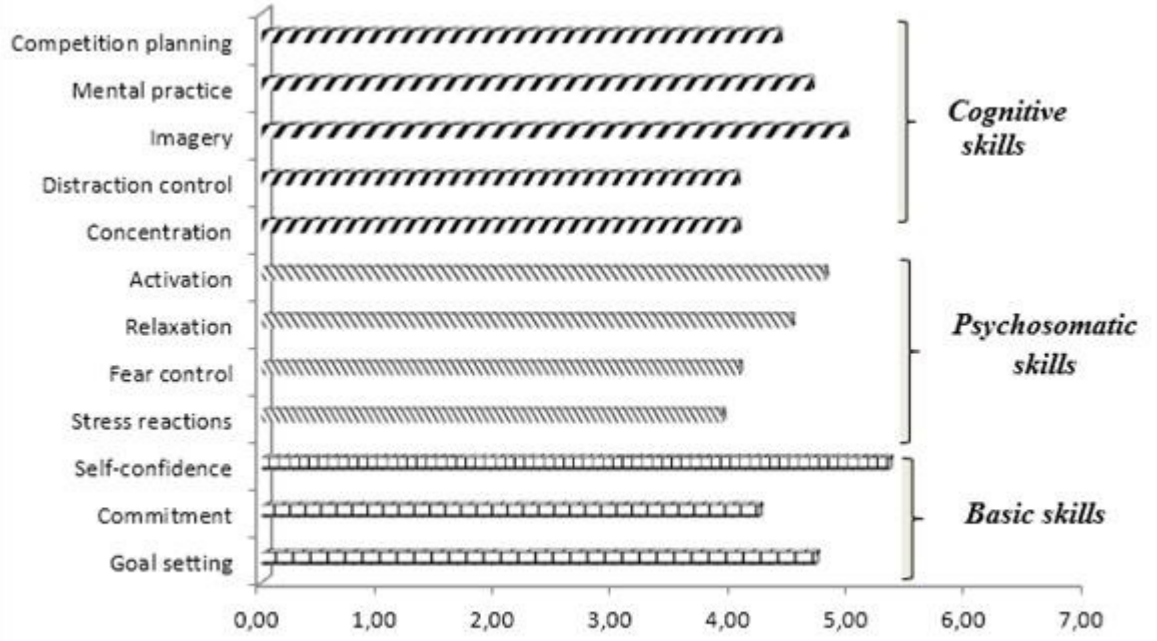

Figure 1: Repartition of score means according to the mental skills

Furthermore, the evaluation of goal setting, commitment and self-confidence showed that the mean scores were 4.7, 4.22 and 5.32 respectively. This result indicates that the studied group tend rather to goal setting and commitment during learning sessions, whereas it displays a quite high level of self-confidence.

Concerning psychosomatic skills, notably reaction to stress, fear control and activation, students showed low to moderate scores. The evaluation of cognitive skills showed that our subjects express low levels of concentration and distraction control but moderate levels of imagery, mental practice and planning.

Sport performance

As for the sport performance in the studied group, we registered an average score of 11.93±1.41, with a variation coefficient of 11.82%.

Analytic study of mental skills and sport performance

Mental skills

So as to compare means of mental skills according to the sex and according to the age, we used the t-test. Tables 1 and 2 display the results.

According to the sex

We notice significant differences between males and females for the following mental skills: goal setting, commitment, self-confidence, relaxation, mental imagery, mental practice and planning (table 1). Indeed, boys display significantly higher scores than females for these mental skills.

Table 1: Comparison of mental skills means between males and females

Scales	Sex	Mean	Standard deviation	t	p
Goal setting	Male	5.08	1.13	4.231	<0.001
	Female	4.33	1.37		
Commitment	Male	4.71	1.22	5.745	<0.001
	Female	3.74	1.18		
Self-confidence	Male	5.52	1.01	2.515	0.013
	Female	5.12	1.22		
Stress reaction	Male	3.89	1.06	0.192	0.848
	Female	3.92	1.09		
Fear control	Male	4.00	1.19	0.566	0.572
	Female	4.09	1.21		
Relaxation	Male	4.75	1.17	2.969	0.003
	Female	4.24	1.28		
Activation	Male	4.88	1.04	1.252	0.212
	Female	4.68	1.23		
Concentration	Male	3.93	1.25	1.282	0.201
	Female	4.15	1.18		
Distractions control	Male	3.96	1.23	0.802	0.424
	Female	4.10	1.26		
Mental imagery	Male	5.21	1.01	3.001	0.003
	Female	4.69	1.42		
Mental practice	Male	5.06	1.14	4.335	<0.001
	Female	4.27	1.43		
Planning	Male	4.68	1.22	3.152	0.002
	Female	4.10	1.36		

According to the age

We got the students into two groups, those who are less than 17 years old and those who are 17 and more. The table 2 gives the repartition of mental skills according to these two groups.

Table 2: Comparison of mental skills according to the age

Scales	Age group		t	p
	Less than 17 years	17 years and more		
Goal setting	4.38±1.38	4.99±1.16	3.43	<0.001
Commitment	3.98±1.36	4.44±1.20	2.54	0.01
Self-confidence	5.26±1.20	5.38±1.08	0.75	0.45
Stress reaction	3.88±1.05	3.93±1.09	0.38	0.70
Fear control	4.13±1.23	3.98±1.17	0.87	0.38
Relaxation	4.30±1.25	4.66±1.24	2.01	0.04
Activation	4.72±1.18	4.82±1.11	0.64	0.52
Concentration	3.83±1.165	4.22±1.24	2.32	0.02
Distractions control	3.91±1.18	4.14±1.30	1.35	0.18
Mental imagery	4.81±1.38	5.08±1.13	1.50	0.13
Mental practice	4.43±1.43	4.86±1.24	2.29	0.02
Planning	4.32±1.39	4.45±1.27	0.69	0.49

The results displayed in table 2 show that the mean difference between the two age groups are significant for some mental skills. Indeed, students who are more than 17 years old present significantly higher means than those of student who are less than17, for the following skills: goal setting, commitment, relaxation, concentration and mental practice.

Sport performance

According to the sex

The repartition of sport performance scores according to the sex shows that boys present higher performance than girls with score means of 12.34 ± 1.35 and 11.53 ± 1.36 respectively. The means comparison using the t-test showed that this difference is significant ($t = 4.24$, $p<0.01$).

According to the age

The study showed that the means of sport performance were 12.50 ± 1.55 in the group of 17 years and more and 11.73 ± 1.35 in the group of less than17 years. The statistical analysis using the t-test confirmed a significant difference making the older group more performant than the younger one ($t = 3.46$; $p<0.01$). On the other hand, we carried out correlation tests in order to investigate the association between mental skills and sport performance. The results are presented in table 3.

Table 3: Correlation analysis between mental skills and sport performance

Scales	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Goal setting	1												
2. Commitment	,631**	1											
3. Self-confidence	,584**	,530**	1										
4. Stress reaction	-,103	-,044	-,095	1									
5. Fear control	,090	,052	,137	,232**	1								
6. Relaxation	,374**	,382**	,456**	-,024	,076	1							
7. Activation	,458**	,351**	,417**	,025	,148*	,565**	1						
8. Concentration	-,013	-,039	-,007	,340**	,365**	,006	,017	1					
9. Distractions control	,110	,104	,058	,310**	,325**	,056	,097	,423**	1				
10. Mental imagery	,575**	,458**	,596**	-,080	,124	,447**	,433**	-,009	-,009	1			
11. Mental practice	,727**	,577**	,567**	-,178*	,045	,504**	,507**	-,126	,053	,682**	1		
12. Planning	,675**	,485**	,552**	-,197**	-,012	,321**	,342**	-,137	-,068	,612**	,658**	1	
13. Performance	,238**	,265**	,088	,023	,136	,141*	,209**	,005	,046	,141*	,165*	,141*	1

**. Significant correlation at 1% (bilateral).

*. Significant correlation at 5% (bilateral).

The analysis of correlation showed that the sport performance is positively associated with the following mental skills: goal setting, commitment, relaxation, mental imagery, mental practice and planning.

Discussion

The present work aimed to make an assessment of mental skills and evaluate their association with sport performance in Moroccan high school students.

Several studies have shown that the Ottawa Mental Skills Assessment Tool (OMSAT-3) proved a satisfactory internal consistency (Durand-Bush and al. 2001; Fournier, 2006; Hamrouniand al, 2011), this was also demonstrated in the present work.

According to the results of the present study, the subjects displayed low to moderate levels of mental skills. In fact, the Moroccan education system does not give importance to these components essential for learning, and the education program lacking in courses intended for the mental development of students.

Moreover, we found that some mental skills differ according to the sex and the age of students. Indeed the highest scores were registered in males and in more than 17 years age group. This result implies that boys, in the absence of mental training, develop some mental skills better than girls, namely goal setting, commitment, self-confidence, relaxation, mental imagery, mental practice and planning. Also, students of more than 17years old are better than younger ones for goal setting, commitment, relaxation, concentration and mental practice.

On the other hand, we demonstrated through the present work that goal setting, commitment, relaxation, activation, mental imagery, mental practice and planning influence significantly students' learning in sport and physical education. In fact, mastery goal has positive consequences such as difficult tasks, high perseverance, use of deep strategies and important self-regulation; also, it furthers learning (Elliott and Dweck, 1988; Harackiewicz and al, 2002), through appropriate strategies: organization, listening and commitment in self-regulation activities (Bouffardand *et al*. 1995; Meeceand *et al*. 1988; Riveiroand *et al*. 2001; Smith and *al.* 2002). Furthermore, students who set mastery goals value the effort (Ames et Archer, 1988), persevere faced with obstacles (Elliot et Dweck, 1988) and present higher level of commitment. Besides, we demonstrated the role of psychosomatic and cognitive skills in the development of sport performance, which confirms what was reported by several studies (*Bernierand et al*, 2009; Gardner and Moore, 2004).

Conclusion

Learning in sport and physical education depends on several factors including mental skills. More advanced studies using cerebral exploration should be carried out to bring more light to this issue. Moreover, the education system in Morocco should bring mental skills into consideration through trainings that aim to develop these abilities among students, in order to improve learning in high school sport and physical education.

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