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The Investigation of the Effect of Attentional Focus Instructions on Learning Motor Skill: The Difference in Children's Learning Process

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Abstract

Background

The aim of this study was to investigate the effects of focus instructions on motor skills learning in children.

Materials and Methods: In this quasi-experimental study, it is chosen 42 girl students randomly who aged 9 to 11 years old in 18 district of Tehran and divided in three groups: internal focus attention, external focus attention, and control. After introduction the primary instructions and watching instructional movie related to basketball free throw, the participates thrown five times in test way then in acquisition phase, made 100 attempts in two sessions during two sequencing days. Each session included two blocks of 10-attempts and recovery time in 2 minute among blocks. The retention test included two blocks of 10-attempt that token 48 hours after last acquisition session. It is used covariance analysis test [3 (group)* 10 (throw)] in acquisition phase and LSD post hoc test to analyze the data.

Results: The result showed that the internal focus attention group performed better than the control group in acquisition phase (P = 0.012), there isn't significant difference between external focus attention group's mean (P = 0.084). Also there isn't significant difference between internal focus attention group's mean and external one (P = 0.401). In other words, internal focus led to an improvement in basketball throwing performance in children at the acquisition stage.

Conclusion

The results of free throw performance scores did not show any significant difference between the groups during retention, but showed the advantage of using internal attention in the acquisition stage.

Key Words: Acquisition of skill, External focus, Free throw Basketball, Information Processing, Internal focus, Motor Performance.

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1- INTRODUCTION

The attentional focus has been examined and identified from different perspectives. It has been investigated as 1. A combination (focus on physical sense) or a distinction (preventing the feelings caused by physical effort), (1 and 2), and 2. In terms of its extent (wide or narrow), and its direction (internal or external) (3-5). It is very important to pay attention to this issue in children since researches have shown that their cognitive development is not as good as that of adults, which can significantly affect the way of interpretation and use of attentional focus and feedback (6-8). In addition, at this age, children are exposed to basic motor skills. It is important to know how we can teach them these skills. The existing literature regarding children shows that it is not clear whether internal or external attention training is more useful (9-14).

Despite the extensive background (15) in the beneficial effects of choosing an external focus of attention, little research has been done on the effects of children's attentional focus. A number of studies have examined the effect of attentional focus on learning and performance in adults. The researches on attentional focus in children had no similar results (10, 13, 16). Some researches support the usefulness of external focus of attention in facilitating learning and improving performance (9, 12, 11). In contrast, a limited number of studies also indicate that the instructions related to the internal focus of attention lead to better performance outcomes in children (10). Having the findings of different researches on adults and children and also the limited available researches, it is difficult to determine which type of attentional focus is best for children to learn skills. One possible explanation for the different outcomes is the cognitive limitations of children compared to adults (10, 11). Up to the age of 11, children are not able to use information processing techniques quickly and effectively compared to adults. Immature abilities of information processing cause children to spend more time absorbing and retrieving the information given to them (6). In addition to their limited ability to process information, children do not have advanced calling strategies and will not be able to collect and write new information. Mature strategies are important in motor learning because they allow participants to add new information to their current knowledge. When this ability is not fully developed (for example, in children), participants are not able to do new things (7). Gallagher and Thomas (8) believe that before the age of 10, children are able to decipher new information immaturely, but their cognitive abilities have not developed enough to organize and process this information. It has also been suggested that this lack of organization in children leads to their weaker performance (5).

There are significant differences in information processing between children and adults which potentially affect learning and motor function. These include the age related to processing speed improvements (6, 17, 18), labeling of movement (19), rehearsal strategy usage (9 and 20), memory organization (8), and selective attention (11, 21). Similar to these findings, the age related to the improvement in the use and quality of rehearsal strategies has also been stated for strategies related to the improvement of memory organization (8). Selective attention, the ability to pay attention to related stimuli in the environment while filtering unrelated factors, is the last difference in information processing between adults and children which improves with age. According to Ross (21), selective attention strategies develop at higher levels. Before the first grade (ages 5-6), children usually only pay attention to a single stimulus, so they will

be able to retrieve little information about the environment. From the first grade till the beginning of early adulthood (ages 5-12), they become more dominant in the environment. This means that children pay attention to most of the related and unrelated environmental stimuli, which results in a great retrieving of information. During this stage, it is of great importance to provide remarkable cues to guide children's attention to dependent sensory information. The final stage of selective attention is achieved during early adulthood (ages 11-12), and is characterized by the ability to pay attention to related stimuli and filter out unrelated items. Given the differences in information processing mentioned above, it is not surprising that some evidence confirms the distinct effects of motor learning variables in adults and children. Currently, there is some evidence showing that children and adults are affected differently by attentional focus training (10) as well as by reduced feedback (22 and 23), and contextual interference (24 and 25) (11). If the main goal of research in the field of learning motor skills is to understand how individuals perform in the realm of sports and physical education, it is illogical to generalize the issue from the adult population to the children's community, given the differences. Researchers' efforts to replicate these findings in children are essential in order to pave the way for their usage. Discrepancies in the findings also lead experts to seek out how to promote the best way for children to learn in a practical environment. Since one of the goals of motor learning researches is to understand or examine the effects of attention instructions on skill learning in children, this research will help to determine which type of training is most beneficial for children. The aim of this study was to determine the effect of the intervention of attentional focus instructions on learning free throw skill of basketball.

2- MATERIALS AND METHODS

2-1. Study design and population

This quasi-experimental study was performed with a pretest-posttest design with 2 intervention groups and 1 control group. In this study, participants included 42 students in third to fifth grade of girls' primary school in the 18th district of Tehran, with an age range of 9 to 11 and having the conditions for entering the research, without any experience in basketball (such as attending extracurricular and club classes). They were selected using convenience sampling and they completed the consent form. Then, they randomly divided into 3 groups of 14 participants (internal attention group, external attention group and a control group) (14).

2-2. Data collection

Participants were randomly divided into 3 groups of 14 participants; 1- the group which received the cues of internal attentional focus, 2- the group which received the cues of external attentional focus and 3- the control group which did not receive any cues. The tests were performed separately over three days, including two similar training sessions for two consecutive days as acquisition and then a retention session approximately 48 hours after the second acquisition session. Before the training sessions began, all participants became familiar with some basic training of free throw in basketball. They first watched a video of a correct free throw on a computer, accompanied by verbal trainings on the correct throw technique by a basketball coach. Then the participants watched the video again and received more verbal cues as a reminder of the trainings. Finally, they were allowed to try 5 test throws with no score to get acquainted with the techniques and equipment. Participants in the internal and external foci of attention groups received special interventions related to attentional

focus instructions after initial training. The internal attentional focus group was trained to place the hand L-shaped and place the ball between the fingers, as well as to focus the wrist movement forward when throwing the ball and to hold the hand up and look at the basket. The external focus group was trained to focus on keeping the ball in the hands, such as the tray balancing by the waiter, and making the ball spin when throwing. They were also trained to focus on a point at the top and throw the ball like passing the ball over the volleyball net (14).

2-3. Measuring tools

In this study, the free throw performance in basketball was tested using a size 6 ball with a circumference of 73 cm. Participants threw the ball from the 3-meter free throw line to the standard basketball's basket at a height of 2.43 cm in the school environment. Free throw performance was scored on a three-point scale. A score of 2 was given for a correct throw, a score of 1 for a throw close to the hoop (the ball hits the hoop), and a score of 0 for a wrong throw. A computer was used to display the video model of correct free throw, accompanied by verbal trainings on the correct throw technique by a basketball coach.

2-4. Intervention

Each participant was informed about the importance of selecting the attentional focus before exercising. After each test session, students were asked what they were thinking when throwing and their answers were recorded (26). Finally, the participants in the focus groups were informed of their main attentional trainings, and the instructional training was provided to both the internal and external foci of attention groups, but the control group did not receive any instructions. Participants in the first session of the test performed 50 to 100 test throws, and to prevent the effect of fatigue on the test, each participant was given a two-minute break after every 10 throws. Participants in the attentional focus cues groups were informed of their focus training, but no feedback was provided on the technique or performance results at any point. However, participants unconsciously received outcome awareness feedback as a natural by-product. In the next day, the participants had the second training session similar to the structure of the previous day and they did other 50 test throws in the same way. Approximately 48 hours after the second training session, a retention test was performed to assess the participant's learning. This retention test includes 20 test throws with a two-minute break after every 10 throws, with no reminder of attentional focus or any feedback to the participants (14).

After each day of training and retention, participants were asked about what they were thinking about when they were practicing their free throw. The format of the selected question is similar to the suggestions of Ericsson and Simon (26), for retrospective verbal reports in order to access the participants' level of working memory after the exercise performance. The answers were recorded verbatim via audio tape and their summary was written.

Presenting verbal instructions for external focus: In this study, four instructions presented to people to focus their attention to something outside the body movements, including: (1. Balance the ball in your hands like a tray in the waiter's hands; 2. Focus on a point above the ring; 3. Throw the ball as if passing a volleyball net; 4. try to turn the ball backwards when releasing it). Presenting verbal instructions for internal focus: In this research, four instructions presented to people to focus their attention to draw their attention to body movements, including: (1. Make an L-shape with your hands and place the ball between your fingers; 2. Keep your hands up, look at the basket; 3. Stretch your

hands and knees at the same time throwing the ball; 4. Move your wrist forward when releasing the ball).

2-5. Inclusion and exclusion criteria

9 to11 year old students with complete mental and physical health, no joint injuries, adequate height and weight with no experience in extracurricular or training in club basketball classes.

2-6. Ethical considerations

The present study was conducted under the supervision of the ethics committee of the Institute of Physical Education and Sports Sciences and in accordance with the international rules of children's basketball training. All students and their parents were informed of the goals and methods of the study and written consent was obtained from parents before participating in the study.

2-7. Data Analysis

In this study, descriptive statistics were used to determine the central indices and dispersion, and the Kolmogorov–Smirnov test was used to match the distribution of participants with the normal distribution, and the Levin test was used for homogeneity of variance. In the process of comparing the measured variables of the groups, the combined analysis of variance test of repeated measures and a significance level of $p < 0.05$ was used and the possible differences between the mean of the variables were studied using the LSD post hoc test. All statistical calculations were performed using SPSS software version 21. Responses to the analysis of manipulation were analyzed using verbal analysis similar to Chi-square (27). Each response was divided into separate words and phrases that expressed a different thinking process during the performance.

3- RESULTS

3-1. General Information

Demographic information including the mean and standard deviation of age, height and weight of participants by group are presented in **Table.1**. Descriptive findings and performance of different groups in basketball free throwing skills are presented in **Table.2 and Figure.1** according to the relevant attention instructions in different stages of training and retention test. As can be seen in **Figure.1**, the performance of the inner and outer attention training groups is better than the control group during the training period and retention tests. This finding indicates the positive effect of internal and external attention instructions on the performance of the samples. In order to examine the findings more accurately, the analysis of variance test method was used (**Tables 3 and 4**).

Table-1: Descriptive information about the age, height and weight of the samples by group.

Group	Trait	Mean	Standard deviation
Internal attention	Age (year)	10.15	0.38
	Height (cm)	142.4	6.25
	Weight (kg)	38.5	7.41
External attention	Age (year)	10.25	0.21
	Height (cm)	143.2	6.62
	Weight (kg)	39.7	5.84
Control	Age (year)	10.20	0.32
	Height (cm)	144.1	6.12
	Weight (kg)	37.8	6.54

Table-2: Description of research variable.

Stages	Category	Internal attention	External attention	Control
		Mean (SD)	Mean (SD)	Mean (SD)
Training	Group 1	0.81 (0.27)	0.81 (0.46)	0.68 (0.49)
	Group 2	0.86 (0.25)	0.81 (0.33)	0.63 (0.38)
	Group 3	0.93 (0.30)	0.92 (0.40)	0.64 (0.42)
	Group 4	1.04 (0.19)	0.92 (0.40)	0.60 (0.44)
	Group 5	0.92 (0.31)	0.98 (0.43)	0.63 (0.43)
	Group 6	1.006 (0.42)	0.86 (0.49)	0.69 (0.50)
	Group 7	1.00 (0.34)	0.78 (0.48)	0.64 (0.39)
	Group 8	1.03 (0.23)	0.80 (0.50)	0.66 (0.43)
	Group 9	0.98 (0.23)	0.88 (0.50)	0.64 (0.37)
	Group 10	1.06 (0.30)	0.85 (0.45)	0.69 (0.39)
Retention	Group 1	1.09 (0.16)	0.94 (0.50)	0.73 (0.39)
	Group 2	0.94 (0.41)	1.03 (0.47)	0.87 (0.41)

SD: Standard Deviation.

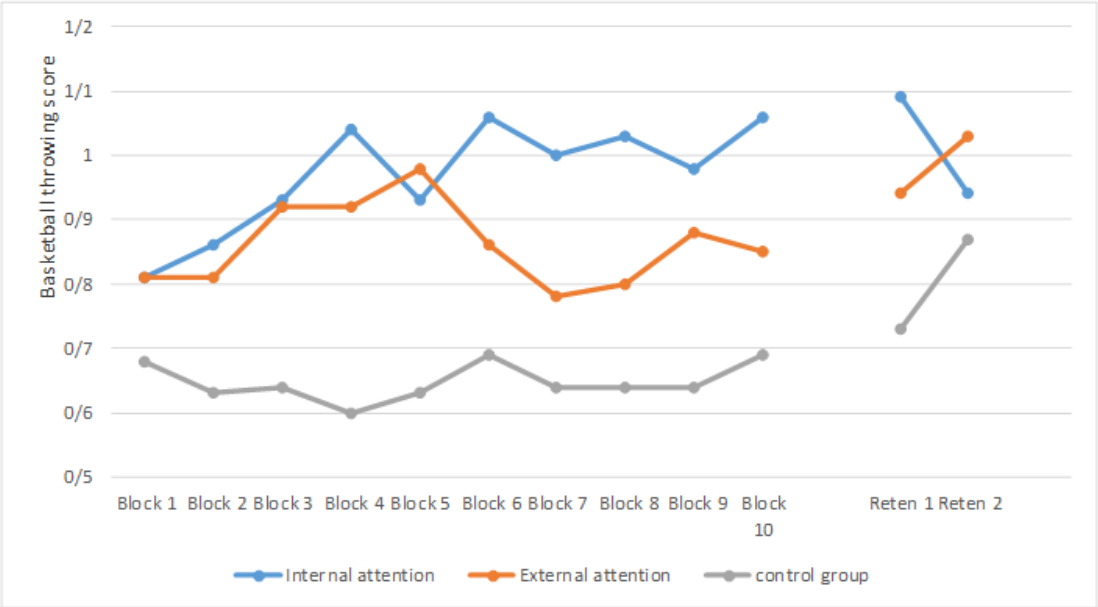

Fig.1: Diagram of basketball throw performance in the acquisition and retention phase.

3-2. Results of comparison of measured variables between groups of combined analysis variance test with repeated measures in the acquisition stage

In the acquisition phase, the results of variance analysis of 2- combined factor of 10 × 3 (focus of attention × category) with repeated measurements of the factor in **Table.3** showed that the main effect of the category on basketball throw performance was not significant. ($F_{9,369}$= 0. 766, η^2=0.648, p=0.01). Also, according to Table 3, the main effect of focus point on basketball throwing performance was significant ($F_{2.41}$ =3.77, η^2=0.15, p=0.031). The results of post hoc test to determine the source of differences showed that there is a significant difference between the average basketball throw performance of the external focus of attention group and control (p = 0.035). The internal focus of attention improving children's basketball throwing performance. There was no significant difference between the average basketball

throw performance of the external and internal focus of attention group (p= 0.679). Finally, the interactive effect of focus signs and category on basketball throwing performance was not significant. ($F_{18.369}$ =0.835, p = 0.441, η^2= 0.03).

Table-3: Results of 2-factor analysis of variance for the acquisition stage. Multivariate analysis of variance.

Resource	SS	DF	MS	F	Sig.	η^2
Group	0.480	9	0.053	0.766	0.648	0.018
Group*attentional focus	1.047	18	0.058	0.835	0.659	0.039
Error	25.7	369	0.070			
Attentional focus	7.75	2	3.62	3.77	0.031	0.15

SS: Sum of squares, DF: Degree of freedom, MS: Mean Square, Sig: The significance level.

3-3. Results of variance analysis of 2-combined factor of 2 × 3 (category ×focus of attention) with repeated measures in retention test

With repeated measurements of the factor in **Table.2** showed that the main effect of the category on learning how to throw in basketball is not significant ($F_{2.41}$ =1.29, p=0.596, η^2=0.007). Also, the main effect of focus of attention on learning how to throw in basketball is not significant ($F_{2.41}$ = 1.29, p=0.289, η^2=0.06). Finally, the interactive effect of focus of attention and category on learning how to throw in basketball is significant ($F_{2.41}$ =3.66, p=0.034, η^2=0.015). As in **Table.4** shows that in the first category of the retention test, the basketball throwing performance of the internal focus attention group was better than the external one, while in the second category, the performance of the external focus attention group was better than the internal one.

Table-4: Results of 2-factor analysis of variance for the retention stage.

Resource	SS	DF	MS	F	Sig.	η^2
Group	0.014	1	0.014	0.286	0.596	0.007
Group*attentional focus	0.364	2	0.182	3.66	0.034	0.15
Error	2.03	41	0.050			
Attentional focus	0.745	2	0.373	1.29	0.284	0.06
Error	11.7	41	0.284			

*Multivariate analysis of variance. SS: Sum of squares, DF: Degree of freedom, MS: Mean Square, Sig: The significance level.

4- DISCUSSION

The purpose of this study is the different effect of internal focus and external focus guidelines on learning motor skills of children, which in the present study, the task is free throwing basketball. Previous research has consistently demonstrated the learning and performance benefits of participants using training using external focus among a range of motor skills. For example, in the

study of Wullf et al. (28), participants performed a balance task in the balance meter by selecting an internal or external focus attention. They found that participants who chose external focus attention had less height fluctuations than those who chose internal focus attention. The same result was shown by Shams et al. in hyperactive children dealing erectile and supra-postural task, with the result that hyperactive children had better erectile and extra-postural performance using external focus attention (29). In the present study, the findings showed that the performance of both internal and external foci of attention groups was better than the control group in the training and retention stages, but the findings did not show a difference between the performance of internal and external foci of attention groups in the retention stage. However, it showed the advantage of using internal focus attention in the acquisition stage. Therefore, the present study did not support the predictions obtained from the adult population. In fact, in assessing the average performance at the acquisition stage, the internal focus of attention group has the highest performance score.

In comparison with previous research on children, the results of the present study confirm the results of Emmanuel et al. (13) who observed the advantage of internal focus of attention for learning children's dart-throwing activity. It is also consistent with the results of Andy's (30) research which proved the advantage of internal focus of attention in children and also with the research of Waz et al. (31) who showed the effect of internal focus of attention. However, it was not consistent with the results of Thorne, (11), and Roshandel et al. (32) that shoed the benefits of external focus attention for learning children's balance activity in darts throwing. A group of researchers also concluded that both types of instructions could directly enhance motor function, but these benefits depends on the child's specific focus priority that is different in any individual (33). Since there is no benefit of external focus attention in any of the acquisition and retention stages of this study, it appears that these findings do not support Prince's constrained action hypothesis (28) and the theory of action effect hypothesis (34). While only constrained action hypothesis can specifically demonstrate the effects of internal attention versus external focus attention, both agree that adopting external focus attention increases motor programming efficiency by enhancing coordination between motor program and motor outcome. In particular, Prince's action effect hypothesis shows that actions are planned according to their motor effects (35). It makes sense that as participants focus on the effects of motion, the organization of motion programming increases, so performance increases. Therefore, it is essential to pay attention to a clear movement effect that is directly related to the purpose of the action to improve performance. So, it is reasonable to suggest that if there is no clear movement effect to attend the task, the benefit of external focus may be overlooked, an assumption that the present findings seem to support. Therefore, not focusing on the effects of movements on internal focus of attention and not having a clear goal may lead to a decrease in coordination between motor planning and movement outcome, so the benefits of adopting external focus attention are not seen in internal focus of attention (35), so it can be concluded that according to the purpose of the task, the advantage of using the type of instructions can be different. While Prince's joint encryption theory and constrained action hypothesis have been proposed to explain the observed differences between internal and external foci of attention conditions, more research is needed. The theory of shared encryption and the constrained action hypothesis on

the concept based on cognitive science: Conscious processing of information can disrupt automated control processes; because they regulate the execution mandatorily. This emphasis is more on examining the relative competencies of the external focus of attention than the internal focus of attention (which was assumed not to facilitate learning so much). This dualistic approach prevents researchers from carefully examining the fact that each type of educational format may be effective in the learning process in a different way. The main weakness is that most previous research in this area has not typically been able to respond to the results of work as performance measures to achieve coordination of movement. In motor learning, the emphasis is on the external focus of attention and connection with automated control processes. Therefore, it is necessary to clarify whether the internal focus of attention may be in favor of achieving coordination of movement. A framework that can provide insight into facilitating the effectiveness of different focus areas for guidance and feedback is the Newell learning model with an emphasis on three stages of learning (coordination, control, and skill).

This model provides a general framework that shows how coordination and movement control are achieved with practice and time. Early in learning (coordination), newcomers are challenged to develop a functional motor pattern, as effective relationships are established between parts of the body. At this stage, learners seek to use stable movement patterns that are present in their existing preferential coordination tendencies in order to find movement solutions for specific movement tasks. In the next stage of learning (control), they are able to adapt to changing performance environments (30). In this phase, facilitators better incorporate motion parameters (e.g., velocity, applied force) in the production of motion to perform more effectively. The purpose of the task and the rules governing control (i.e., the main features of effective motion control) progress with learning, and the learner begins to assign "optimal" values to the motion control variables in the skill stage. Optimal skill or organization is observed when the performer uses the reaction forces of the limb or environment to perform the movement. Newell's KM model (34) provides a clear reference framework by which researchers can avoid the inherent bias of relative comparisons of external and internal foci of attention. This can support research into the impact of different attention-grabbing guidelines as a function of skill level. Therefore, the internal focus of attention may be appropriate for novices in the coordination phase, which requires the assembly of a basic and coordinated performance pattern. In addition, the inner focus of attention may be helpful to the learner if the context of performance emphasizes the form of movement rather than the results of performance. This proposition is supported by the Newell learning model, which explains how the inner focus of attention can still be related to the acquisition of motor skills in the early stages of learning.

In the control phase, individuals may benefit from the external focus of attention to achieve success in a fundamental functional movement. Newell's KM model helps researchers to understand the differences in focus appropriate for different groups of learners. One question is whether the learning processes in novices are studied in stark contrast to beginners or advanced learners in a particular sport or physical activity, which may be in the control phase. Learners may move quickly through the coordination phase (35), where focus of attention may be useful for assembling a practical motor solution. It is acceptable that some participants in these studies may move

quickly to the control stage. At this stage, the external focus of attention may be used to adopt a coordinated movement pattern. However, a group of researchers (36) in a study of children aged 12-8 years, concluded that the positive effects of focus in growing children is short-lived and does not remain constant after a week, and these effects are temporary. The use of the Newell model can provide a useful framework to support the dualistic approach in identifying that focus may be effective for motor learning. It turns out that the effect of external and internal focus of attention as a novice progresses can be effective through coordination with control and skill (automaticity) steps. For example, the focus condition switch can be conditional on progress in the control phase. This determines the relative effectiveness of different focal points at different stages of learning. Most empirical studies tend to examine learning and performance changes based solely on task performance outcomes, such as balance time, balance, or number of errors.

Little effort has been done to investigate the effects of differentiated focus on movement coordination in addition to analyzing performance results. For example, Wolf et al. examined changes in the center of mass for a vertical jump task as a function of focus. However, no kinematic data has been obtained to determine whether the jump pattern has changed with it. Further empirical research is needed to examine changes in kinetic variables with different concentrations to understand how the coordination of human movement changes according to instructions. If the emphasis is on examining changes in coordination, it is plausible that the benefits of focusing attention guidelines can be reported, rather than based solely on performance outcomes. This is related to the previous discussion of short-term interventions in the focus of most attention studies. It is possible that performance improvement can bring a longer period of time to a certain level with significant changes observed in motor coordination. Thus, an important issue for future researchers to consider is the importance of internal focus of attention when learning under task constraints that emphasize the form of movement (e.g. learning ice skating, dancing, and routine gymnastic movements) as opposed to achieving specific performance outcomes (e.g., passing the ball in teamwork). For example, if attention is focused on the path of the golf ball, how does it affect the shape of the movement, contrary to the actual movement pattern of the ball holder? It is conceivable that under different task constraints, the internal focus of attention can actually be more effective when the goal (reproduce) is a particular movement pattern or routine.

Although extensive research has highlighted the negative effects on the results of internal focus of attention performance, emphasizing the internal focus of attention in relation to achieving motor coordination may be helpful (taken from 37). Research on the effect of external and internal focus of attention instructions has not been able to emphasize the importance of any movement shape instructions in most studies. The effect of the task constraints used in these studies is very important, and perhaps, the nature of the tasks under consideration may affect the effectiveness of an external or internal focus, or even both at the same time! Therefore, it is appropriate to fully explore the role of work constraints in how internal or external foci of attention instructions are presented with a focus on a learning context. Labeling internal or external attention instructions may prevent perception of the benefits of attention focus instructions. An important step in the review of literature may be to understand how different types of instructions lead to

the dynamics of motion (e.g., shape of motion) and the effects of motion (i.e., the result of motion) on the acquisition of skill (38). As mentioned, most studies have examined the effects of attention focus using outcome measures. However, Lawrence et al. (35) used a series of gymnastic movements in their research to determine the effect of attention focus on movement shape. Participants performed these movements in two days while focusing on their mechanisms (internally related), postures and facial muscles (internally unrelated), movement and pressure maintenance (external), or had no focus at all (control group). After one week of retention time, the groups did not differ in technique scores on the transfer and retention test. This seems to indicate the limitation of the benefits of external focus of attention learning to a skill in which the outcome is of great importance. Potential explanations for differences in findings may depends on the type of motor activity that has been used.

Targeted movement activities (such as darts throwing, free throwing) sought to rely on visual information during performance compared to balancing tasks. Given the sensory information of pre-adult children (21), attention signs may not be important for learning these types of activities. Nevertheless, the initial interpretation should be approached with caution to the few examples of research available. Another interpretation that can be considered for these results is that according to the answers of children's verbal reports in this study, a high percentage of people thought about this issue while free throwing; "Put the ball into the ring," in other words, thought of a factor related to the goal, which was higher in percentage in persons with internal focus of attention (76%), and they consciously controlled the ball. According to research by Andy et al. (30), in children who consciously control the target - which was the instructional guideline here - the group of people who received the internal focus of attention instruction performed better; The clearest explanation for this difference in outcomes is that because children have relatively low levels of automatic movement and cognitive ability, they consciously control goals, which, according to previous research (34), is better accomplished with internal focus of attention patterns. In general, research has shown that there is no single formula for providing instruction to learners in all areas and tasks. The role of the performer, the task and the environment are all important reciprocal constraints that must be considered while learning and acting.

In designing work-learning constraints, practitioners need to understand the purpose of the task (for example, the importance of the form of movement or the effect of movement) and appropriate instructions accordingly. Instructions that focus more on the form of movement can still be related to activities such as dancing, gymnastics, ice skating or even weightlifting. The constraints of the main performer, such as skill level, along with a learning pattern like that (32) can also play an important role in influencing different situations of concentration. There is a need to effectively examine how and when educators or professionals at different stages of learning may find it useful to focus internal or external foci of attention instructions.

5- CONCLUSION

Regarding the presented material, it can be suggested that a theoretical understanding of how the different concentrations of attention instructions work can have practical implications for teachers and educators in helping learners acquire skills, and that changes in learning processes depend on both task and performance. Instructors should take on the role of facilitator in guiding learners in

search of functional motor solutions, regardless of the type of focus of attention needed, in different areas of learning. Finally, the findings of the present study showed that the performance of both internal and external foci of attention groups was better than the control group in the training and retention stages, but the findings did not show a difference between the performance of internal and external foci of attention groups in the retention stage. However, in the acquisition phase, the performance of the internal focus of attention group was better. In fact, the present findings did not support the research background and predictions obtained from the adult population. Therefore, in order to better understand and dispel the ambiguities regarding the effectiveness of this type of instruction, more research is needed on children's motor performance.

6- CONFLICT OF INTEREST: None.

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