Sviluppo delle life skills nella disabilità cognitiva adulta attraverso lo sport
Life skills development in adult cognitive disabilities through sport

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ABSTRACT
The aim of this research is to investigate the circular relationship between perception, cognition and action in direct interaction through volleyball in a sample of adult athletes with cognitive disabilities. Self-perception will be analysed, in relation to individual sports goals and daily life management. The sample consisted of 71 items of which, 57 who consistently practiced motor activity, while the control group consisted of 14 items who did not practice motor activity. Athletes were given the Perceived Self-Efficacy Scale in complex problems managing (Farnese, Avallone, Pepe, Porcelli, 2007). As research shows, in volleyball the body and mind are directly affected by the action of other teammates, so the ability to adapt to situational variables, developed the ability to manage complex problems of athletes with cognitive disabilities. Compared to the control group all areas examined have a statistically significant gap.

Lo scopo di questa ricerca è quello di indagare la relazione circolare tra percezione, cognizione e azione in interazione diretta attraverso la pallavolo in un campione di atleti adulti con disabilità cognitiva. Verrà analizzata l'autopercezione, in relazione agli obiettivi sportivi individuali e alla gestione della vita quotidiana. Il campione è composto da 71 elementi di cui, 57 che praticavano costantemente l'attività motoria, mentre il gruppo di controllo è composto da 14 elementi che non praticavano attività motoria. Agli atleti è stata somministrata la Perceived Self-Efficacy Scale nella gestione di problemi complessi (Farnese, Avallone, Pepe, Porcelli, 2007). Come dimostra la ricerca, nella pallavolo il corpo e la mente sono direttamente condizionati dall'azione degli altri compagni, quindi la capacità di adattarsi alle variabili situazionali, ha sviluppato le capacità di gestione dei problemi complessi degli atleti con

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Formazione & Insegnamento XX – 1s – 2022
Codice ISSN 2279-7505 (on line) © Pensa MultiMedia Editore
Codice doi: 10.7346/-feis-XX-01-22_25

disabilità cognitiva. In confronto al gruppo di controllo tutte le aree prese in esame hanno uno scarto statisticamente rilevante.

KEYWORDS
Volleyball; Constancy in sports practice; Autonomy; Self-efficacy; Cognitive Disabilities
Pallavolo; Costanza nella pratica sportiva; Autonomia; autoefficacia; Disabilità Cognitiva

Introduction

The presented work would like to investigate the extent to which motor activity can positively influence the lives of individuals with cognitive disabilities in terms of the development of cognitive skills and self-efficacy. Life skills are defined as "skills that lead to flexible and positive behaviour and enable individuals to deal effectively with the demands and challenges of everyday life. They are the core set of skills that are at the heart of any prevention program aimed at promoting the well-being of children and adolescents" (WHO). Ten skills have been identified, including: Self-Awareness, Emotion Management, Stress Management, Effective Communication, Effective Relationships, Empathy, Creative Thinking, Critical Thinking, Decision Making, Problem Solving (Ardis, & Bicchi, 2016). The best place to learn them is in school and in the gym through learning and practice.

So this research stems from the observation work carried out in the field on professional volleyball players with cognitive disabilities. The project idea stems from some research findings that support the hypothesis that motor and intellectual capacities are highly interconnected in individuals with atypical development (Morsanuto, Marsico, & Peluso Cassese, 2019). Furthermore, it is hypothesised that perception may vary depending on the type of motor response expected; indeed, the central concept is taken into account in embodied theories of simulation as a fundamental mediator for learning in cognitively impaired conditions. Jeannerod (2006) defines this process as the recall of the same neural networks activated during the perceptual, motor and emotional phases, inserting the concept of deferred simulation from the act. In fact it does not result in an explicit motor response. In the simulation phase, neural networks are stimulated in different ways with less intensity than when we actually have to interact with the environment and with others. In addition, there is an interruption process to block the input that allows the action to be performed.

Sport is educational from several points of view: it teaches discipline, respect for rules, improves self-knowledge; it is sharing, commitment and sacrifice to achieve goals. Playing sport means learning to have a goal and working towards it. Under this aspect it can be easily argued that sport is not only a type of organised educational practice (Ottaviano, & Travagliati, 2005), but also an excellent training to train resilience, it teaches to get up after defeats and gratifies every time an important goal is reached (Mariani, Marcolongo, Melchiori & Peluso Cassese, 2020; Coco, Tortorella & Casolo, 2020). Sport has a very important function in the personal growth of the individual because, together with the other systems

of belonging such as the family, school and peer groups, it is the engine of learning "models of conduct, languages, values, roles, beliefs, fashions and in which extend social relations, hopes and fears, ideas, images of oneself and others relevant or not for growth, training and the transition to adulthood now increasingly hastily sought" (Coco, Tortella & Casolo, 2020). Nevertheless, as Sgrò argues (Sgrò 2015), "Educating in movement from the earliest years of human development, in the so-called sensitive phase, is an indispensable step both for the development of motor skills and for the overall growth of the child who, through movement and the practice of sporting activities, will be able to define his or her personality and embrace the values universally conveyed by sport". Engaging in motor activity is part of the development of psychophysical well-being and therefore has a significant importance in any process of acquisition, restoration or enhancement of the individual's abilities (Coco, Tortella & Casolo, 2020). In addition to this, there is evidence in the literature that the acquisition of specific skills in a given sport leads to being able to use those skills in different domains (Harrison 2016). It should be borne in mind that environmental factors and health conditions affect individuals by decreasing engagement in motor activity and that motivation can be a vehicle to convey willingness to participate in sport (Saebu & Sørensen, 2011).

1. Sport and disability

Associating sport with the world of the disabled is an action that stems from the desire to consider the differently abled person as a man, unique and unrepeatable (Frabboni & Minerva, 2000), who possesses potential but may be "poorly gifted" in a certain quality of life. For anyone, having a particular endowment in a sporting domain could correspond to a low endowment in other domains (Ghirlanda, 2003). It should be borne in mind that "motor and sports activities affect the formation of the person, with a shaping and interactive function that expands beyond the traditional objectives" (Sibilio, 2015, p. 21), so it is certainly a path towards inclusiveness understood as equal social dignity in a way that is increasingly moving towards the exaltation of the public image and where it is required, in case of disability, that sport is one of the various components that can allow the disabled person to compensate or enhance the skills necessary for the development of the whole personality and motor skills.

The disabled person lives with serious changes in proprioception, esteroception, and sensations relating to pain/pleasure; they experience a crisis in psychophysical unity due to a deficient mind/body integration, which is why they often perceive the judgement of others as negative.

Through psychomotor education and sports practice, he has the opportunity to experience a new mind/body integration, he has the chance to improve cognitively through knowledge of his body, space, time and speed; on a physical level by increasing muscle strength, balance and coordination through conscious and targeted repetition of motor acts, learning to overcome fatigue; on a sporting level by acquiring technical knowledge of the various sporting disciplines, encouraging interpersonal communication and collaboration (through team play), respecting shared rules and stimulating the learning of social rules; on a psychological level, producing a state of general satisfaction that leads to the containment of emotional states, increasing the capacity for self-control; on a socio-educational level, increasing one's autonomy, encouraging commitment during training and respect for the opponent, teaching courage, promoting loyalty; promoting socialisation,

aggregation, inclusion, thus overcoming fears, prejudices and isolation. But for this to happen, it is necessary to ensure that sport is a function of the subject and not vice versa, especially if the person practising it is disabled.

Sport in the socio-educational field is an inclusive driver and an accelerator of the process of identification of the bodily self, allowing those with disabilities to express their talents through bodily manifestation (Palumbo, Ambretti, & Scarpa, 2019) and also with the development of cognitive skills and self-efficacy that makes the practice of sport the main actor in the "active construction of basic skills and transversal skills" (Sibilio, 2002, p. 126). This framework is completed by the concept of coping. This concept is closely linked to the resilience mentioned in the introduction and therefore to the individual's ability to develop strategies to adapt to the situation in order to benefit from it. If the daily activity of the body can be considered as coping, i.e. "constant effort of cognitive and behavioural change implemented to deal with specific internal and/or external demands" (Tafuri, Morsanuto, 2021) the same could be assumed for sporting activity.

2. Self-efficacy and cognitive skills

According to Bandura, self-efficacy "corresponds to the awareness of being able to master specific activities, situations or aspects of one's psychological or social functioning" (Bandura, 1997), particularly with respect to the test on perceived self-efficacy in the management of complex problems (Farnese, Avallone, Pepe, & Porcelli, 2007), which is the instrument used in this research work, emotional maturity, the finalization of action, relational fluidity and the analysis of the context must be taken into consideration, so that it can be deduced that one of the important aspects is the relationship with the environment that surrounds us, which in turn depends on cognitive abilities and their development.

The environmental potential (affordance) is in strong relation to the behaviours that take place in the constantly changing environment, which generates a lot of information that has a meaning that manifests itself on different dimensions (Bell et al., 1996). The human/environment relationship is a continuous interaction between the individual and physical systems (Kuh, Ponte, & Chau, 2013). While there is evidence that in typical development the stimuli presented in the physical environment such as sports activities, equipment and toys leads to improved motor development, there is also evidence that the quality of education affects this development. The dimensions to be taken into account are one's own physical capabilities and the characteristics of the environment around one. The child's ability to learn with respect to the relationship between these dimensions leads to visible results in the short term, as motor knowledge is constantly increased (Meraviglia, 2012). Development in children originates from movement, so it can be inferred that motor development may be the most important dimension and the basis for growth and development (Janssen et al., 2012). There is evidence that the development of various skills through the stimulus of affordance is slower in individuals with disabilities than in normal individuals, but this development is there and it is constant (Firoozjah et al., 2019). In learning there are various methods by which skills can be acquired or refined, and explicit instruction is one example of this, i.e. someone showing what to do and thus creating knowledge in those who have to do it. Another method is that which arises from spontaneous learning when by applying a certain known motor pattern a new pattern is implemented that arises from direct experience, this context creates new knowl-

edge through serendipity (Kennedy, Whitehead, & Ferdinand-James, 2022) This term, coined by Horace Walpole in the 18th century, indicates precisely the possibility of making discoveries by chance while looking for something else. Interaction with the environment involves perceptual aspects and also the activation of cognitive processes. Adaptation to situations activates problem solving and decision making abilities, which are associated with complex cognitive processes, whereby modification of motor skills can influence the development of cognitive abilities by competing with attentional abilities (Bruner, 1973).

The beneficial effects of motor activity on cognitive functions are well known in the literature (Lin et al., 2018). We refer to all mental processes of embodied learning, learning through understanding and thinking, attention, memory, visuospatial processing, executive functions, etc. (Lezak et al., 2012). Just as there is a difference in the effectiveness of sporadic or light motor activity compared to that carried out systematically and with a goal. In particular, it was found that the decline in cognitive ability is far less in the case of constant motor activity (Zotcheva et al., 2018). In particular, physical activity could mitigate some debilitating conditions that are in comorbidity with disability such as obesity, osteoporosis (Carfì et al., 2017). Despite all these factors that seem to be relevant to be able to give a better quality of life in the context of disability, it seems that individuals in this condition do less physical activity than the normotised (Shield, Plant, Warren, Wollersheim & Peiris, 2018) although it seems that studies are limited to children and seem to be based on self-assessment or parental reporting (Martin & Choi, 2009). The fact of the matter is that the World Health Organization (World Health Organization, 2019) issued recommendations that aligned with what was reported in the United States, namely that adults, including adults with disabilities, should do at least 150-300 minutes per week of moderate intensity, or 75 minutes per week of vigorous intensity aerobic physical activity (U.S. Department of Health and Human Services, 2018). However, the effort made by organisations such as Special Olympics to promote sport is beginning to show its effectiveness (Oreskovic et al., 2020).

3. Tools, methods, Control and Sample Analysis

The survey instrument used is the Scale of perceived self-efficacy in the management of complex problems (Farnese, Avallone, Pepe, & Porcelli, 2007). The test evaluates 4 sub-scales: (1) Emotional maturity, i.e. the perception and beliefs that people have about their ability to manage stressful situations; to deal with unexpected events and to have self-control over difficult events and situations. (2) Finalization of action: that is, the beliefs that people have about their ability to set concrete and achievable goals, prioritizing and adapting them to their skills and to pursue the objectives set. (3) Relational fluidity: that is, one's perception of one's ability to interact and deal with others, to give and ask for help, to maintain good relationships and manage conflict. (4) Context analysis: those beliefs that people have about their ability to understand and intuit the context in which they operate by grasping the links between different events and different situations; to understand requests, to use language appropriate to different circumstances (Farnese, Avallone, Pepe, & Porcelli, 2007). Through this administration we aimed to investigate the 4 areas in a group of subjects with cognitive disabilities. The sample consisted of 71 items of which, 57 who consistently practiced motor activity, while the control group consisted of 14 items who did not practice motor activity [Figure

1]. All subjects involved were able to read. The test, with the families' permission, was administered via web using Google Forms. The dissemination and administration to the sample was done through the coaches previously trained by the authors, who, instead, directly administered the test to the control group.

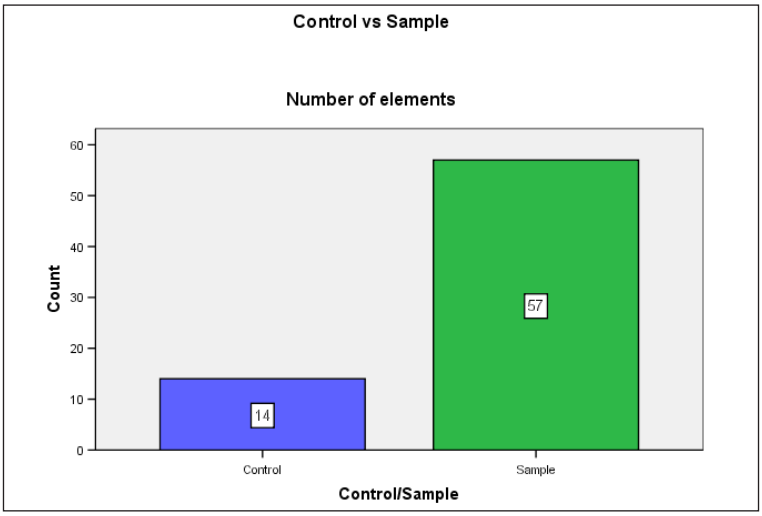

Figure 1 - Control vs Sample - Number of elements

The gender distribution is proportional between the sample and the control group [Figure 2]

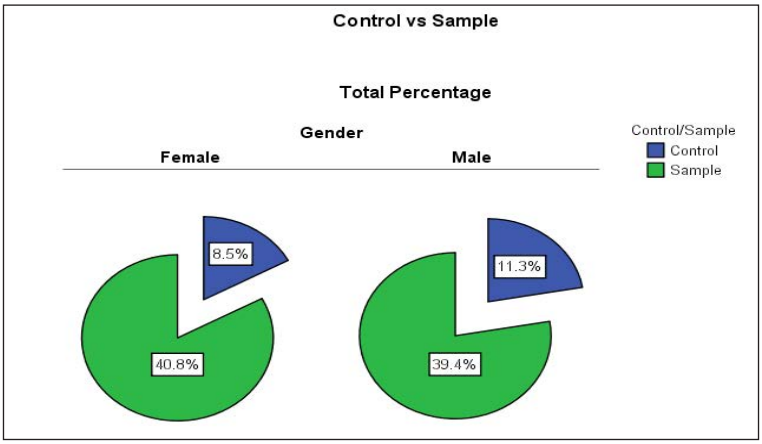

Figure 2 - Control vs Sample - Total percentage per gender

The substantial difference between the control group and the sample regarding age [ ] is characterised by the fact that the control group is on average older (area 31-40), while the sample is relatively younger (area 17-20). Figure 3] is characterised by the fact that the control group is on average older (area 31-40), while the sample is relatively younger (area 17-20). Substantially, however, for both groups the area 21-30 years is around 40%.

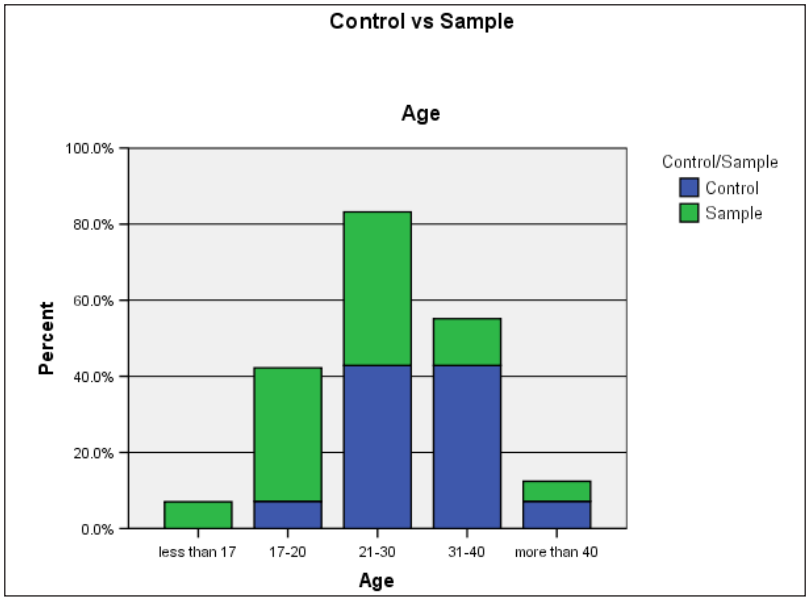

Figure 3 - Control vs Sample - Age

The graph shows the percentage distribution of the different disabilities within the sample and the control group [Figure 4]. The pathologies present in both groups are: Down Syndrome, Cognitive Deficit (high and medium) and Autism. These are also the disabilities with a higher incidence in the two groups.

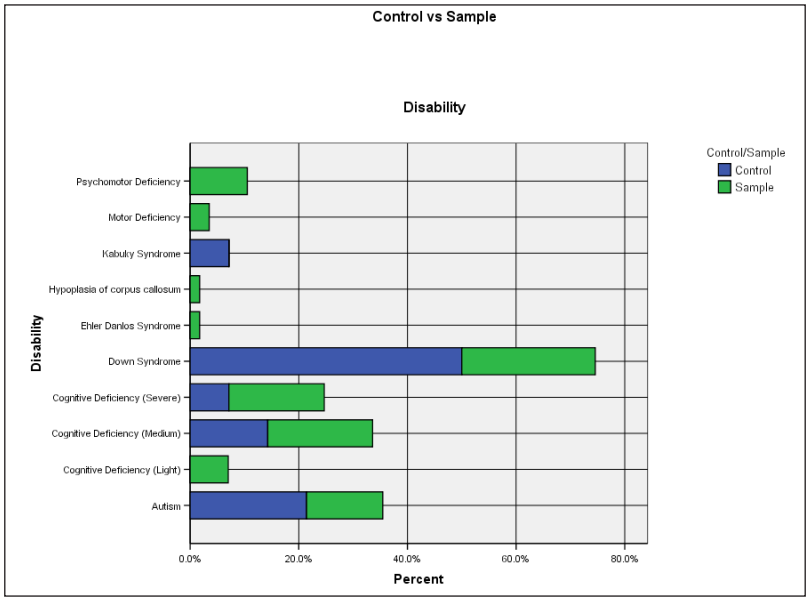

Figure 4 - Control vs Sample - Disability

The statistical frequencies of the sample and the control group are summarised in the following table

Control/Sample

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Control	14	19.7	19.7	19.7
	Sample	57	80.3	80.3	100.0
	Total	71	100.0	100.0	

Table 1 - Control/Sample

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	35	49.3	49.3	49.3
	Male	36	50.7	50.7	100.0
	Total	71	100.0	100.0	

Table 2 - Gender

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	more than 40	4	5.6	5.6	100.0
	17-20	21	29.6	29.6	29.6
	21-30	29	40.8	40.8	70.4
	31-40	13	18.3	18.3	88.7
	less than 17	4	5.6	5.6	94.4
	Total	71	100.0	100.0	

Table 3 - Age

Disability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Autism	11	15.5	15.5	15.5
	Cognitive Deficiency (Light)	4	5.6	5.6	21.1
	Cognitive Deficiency (Medium)	13	18.3	18.3	39.4
	Cognitive Deficiency (Severe)	11	15.5	15.5	54.9
	Down Syndrome	21	29.6	29.6	84.5
	Ehler Danlos Syndrome	1	1.4	1.4	85.9
	Hypoplasia of corpus callosum	1	1.4	1.4	87.3
	Kabuky Syndrome	1	1.4	1.4	88.7
	Motor Deficiency	2	2.8	2.8	91.5
	Psychomotor Deficiency	6	8.5	8.5	100.0
	Total	71	100.0	100.0	

Table 4 – Disability

4. Data Analysis

The aim is to verify whether the average obtained by the sample in the different areas (Emotional Maturity, Action Finalization, Relational Fluidity, Context Analysis) has a statistically significant difference from the average value obtained by the control group in the same areas.

The Independent Samples T-Test (SPSS) was used to analyse the data and compare the results of the control group and the sample.

The null hypothesis H_0 is therefore that there is no statistically significant difference between the mean value obtained for the sample and the mean value obtained for the control group in the different areas.

The conditions for the applicability of the test are

Independent observations

Each statistical unit represents a different person. The condition applies to our data.

2. Normality

The dependent variable must follow a normal distribution in the population. This is only necessary for samples smaller than about 25 units. Having 71 statistical units makes the normality test unnecessary.

3. Homogeneity: The standard deviation of our dependent variable must be equal in both populations. We only need this assumption if our sample size is (clearly) unequal. SPSS checks whether this holds when we run our t-test. If not, we can still report the correct test results.

In conclusion, we can consider the conditions verified

5.1 Emotional Maturity

The descriptive statistics applied to the control group and the sample gives the results in the table below.

Group Statistics

	Control/Sample	N	Mean	Std. Deviation	Std. Error Mean
Emotional Maturity	Control	14	8.36	2.205	.589
	Sample	57	14.74	4.086	.541

Table 5 - Emotional Maturity - Group Statistics

The sample therefore has a mean of 14.74 for the area in question compared with 8.36 for the control group, with a delta of 14.71-8.36 = 6.38.

Inferential statistics show us the following results

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Emotional Maturity	Equal variances assumed	4.597	.036	-5.623	69	.000	-6.380	1.135	-8.643	-4.116
	Equal variances not assumed			-7.973	37.915	.000	-6.380	.800	-8.000	-4.760

Table 6 - Emotional Maturity - Independent Samples Test

Levene's test for equality of variances gives a p-value (Sig. = 0.036) of less than 0.05. Therefore we can consider the variances as different and consequently only consider the second row of the table

Considering the T-Test of equality between the averages (Null Hypothesis), we note a p-value of less than 0.05 (Mr 2-tailed = 0.000). Consequently, we can reject the null hypothesis of equality between the means of the control group and the sample. The fact that 0 is outside the confidence interval also reinforces this conclusion (-8.000 and -4.760).

The descriptive statistics show that the sample achieved a higher average result than the control group for the Emotional Maturity area and this difference is statistically significant (6.38).

5.2 Action Finalization

The descriptive statistics applied to the control group and the sample gives the results in the table below.

Group Statistics

	Control/Sample	N	Mean	Std. Deviation	Std. Error Mean
Action Finalization	Control	14	7.86	2.958	.790
	Sample	57	15.74	4.426	.586

Table 7 - Action Finalization - Group Statistics

Thus, the sample has an average of 15.74 for the area in question against 7.86 for the control group, with a delta of 15.74 -7.86 = 7.88

Inferential statistics show us the following results

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Action Finalization	Equal variances assumed	3.316	.073	-6.306	69	.000	-7.880	1.249	-10.372	-5.387
	Equal variances not assumed			-8.007	29.185	.000	-7.880	.984	-9.892	-5.868

Table 8 - Action Finalization - Independent Samples Test

Levene's test for equality of variances gives a p-value (Sig. = 0.073) greater than 0.05. Therefore we can consider the variances to be equal and consequently only consider the first row of the table

Considering the T-Test of equality between the averages (Null Hypothesis), we note a p-value of less than 0.05 (Mr 2-tailed = 0.000). Consequently, we can reject the null hypothesis of equality between the means of the control group and the sample. The fact that 0 is outside the confidence interval also reinforces this conclusion (-10.372 and -5.387).

The descriptive statistics therefore show that the sample achieved a higher average result than the control group for the Action Finalization area and this difference is statistically significant (7.88).

5.3 Relational Fluidity

The descriptive statistics applied to the control group and the sample gives the results in the table below.

Group Statistics

	Control/Sample	N	Mean	Std. Deviation	Std. Error Mean
Relational Fluidity	Control	14	11.57	3.131	.837
	Sample	57	18.54	4.376	.580

Table 9 - Relational Fluidity - Group Statistics

Thus, the sample has a mean of 18.54 for the area in question against 11.57 for the control group, with a delta of 18.54 -11.57 = 6.972.

Inferential statistics show us the following results

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Relational Fluidity	Equal variances assumed	3.270	.075	-5.606	69	.000	-6.972	1.244	-9.454	-4.491
	Equal variances not assumed			-6.850	27.021	.000	-6.972	1.018	-9.061	-4.884

Table 10 - Relational Fluidity - Independent Samples Test

Levene's test for equality of variances gives a p-value (Sig. = 0.075) greater than 0.05. Therefore we can consider the variances to be equal and consequently only consider the first row of the table

Considering the T-Test of equality between the averages (Null Hypothesis), we note a p-value of less than 0.05 (Mr 2-tailed = 0.000). Consequently, we can reject the null hypothesis of equality between the means of the control group and the sample. The fact that 0 is outside the confidence interval also reinforces this conclusion (-9.454 and -4.491).

From the descriptive statistics it can therefore be seen that the sample achieved a higher average result than the control group for the Relational Fluidity area and this difference is statistically significant (6.972).

5.4 Context Analysis

The descriptive statistics applied to the control group and the sample gives the results in the table below.

Group Statistics

	Control/Sample	N	Mean	Std. Deviation	Std. Error Mean
Context Analysis	Control	14	9.21	2.694	.720
	Sample	57	17.33	4.019	.532

Table 11 - Context Analysis - Group Statistics

The sample therefore has a mean of 17.33 for the area in question compared with 9.21 for the control group, with a delta of 17.33-9.21 = 8.119.

Inferential statistics show us the following results

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Context Analysis	Equal variances assumed	2.532	.116	-7.153	69	.000	-8.119	1.135	-10.383	-5.855
	Equal variances not assumed			-9.067	29.081	.000	-8.119	.895	-9.950	-6.288

Table 12 - Context Analysis - Independent Samples Test

Levene's test for equality of variances gives a p-value (Sig. = 0.116) greater than 0.05. Therefore we can consider the variances to be equal and consequently only consider the first row of the table

Considering the T-Test of equality between the averages (Null Hypothesis), we note a p-value of less than 0.05 (Mr 2-tailed = 0.000). Consequently, we can reject the null hypothesis of equality between the means of the control group and the sample. The fact that 0 is outside the confidence interval also reinforces this conclusion (-10.383 and -5.855).

The descriptive statistics therefore show that the sample obtained a higher average result than the control group for the Context Analysis area and this difference is statistically significant (8.119).

5.5 Correlations in the sample

Analysing the bivariate correlations between the various areas among the statistical units in the sample, it can be seen that Emotional Maturity has a 99% significant positive correlation with the other areas. This means that higher values of Emotional Maturity correspond to higher values in the other areas and vice versa. The same thing can be said for the correlation between Contex Analysis and Action Finalization.

There is a significant positive correlation, but at 95%, between the areas Relational Fluidity and Acttion Finalization and between the areas Contex Analysis and Relational Fluidity.

However, it can be said that higher values in one area also have correspondingly higher values in the other areas, showing a positive correlation between the different areas.

Correlations

		Emotional Maturity	Action Finalization	Relational Fluidity	Context Analysis
Emotional Maturity	Pearson Correlation	1	.617**	.364**	.498**
	Sig. (2-tailed)		.000	.005	.000
	N	57	57	57	57
Action Finalization	Pearson Correlation	.617**	1	.283*	.670**
	Sig. (2-tailed)	.000		.033	.000
	N	57	57	57	57
Relational Fluidity	Pearson Correlation	.364**	.283*	1	.328*
	Sig. (2-tailed)	.005	.033		.013
	N	57	57	57	57
Context Analysis	Pearson Correlation	.498**	.670**	.328*	1
	Sig. (2-tailed)	.000	.000	.013	
	N	57	57	57	57

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 13 - Area Correlations - Sample

5.6 Statistical analysis between Areas and Gender of the sample

The descriptive statistics applied to the control group by gender gives the results in the table below.

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Emotional Maturity	Female	29	15.55	4.023	.747
	Male	28	13.89	4.049	.765
Action Finalization	Female	29	16.55	3.660	.680
	Male	28	14.89	5.028	.950
Relational Fluidity	Female	29	19.17	4.653	.864
	Male	28	17.89	4.049	.765
Context Analysis	Female	29	18.28	3.217	.597
	Male	28	16.36	4.564	.863

Table 14 - Area and Gender Group statistics - Sample

Thus, the sample has different averages for males and females in the different areas. The aim is to test whether these differences are statistically significant.

Inferential statistics show us the following results

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Emotional Maturity	Equal variances assumed	.002	.968	1.551	55	.127	1.659	1.069	-.484	3.802
	Equal variances not assumed			1.551	54.902	.127	1.659	1.069	-.484	3.802
Action Finalization	Equal variances assumed	1.490	.227	1.428	55	.159	1.659	1.162	-.670	3.987
	Equal variances not assumed			1.420	49.262	.162	1.659	1.168	-.689	4.006
Relational Fluidity	Equal variances assumed	1.079	.303	1.106	55	.274	1.280	1.157	-1.039	3.598
	Equal variances not assumed			1.109	54.427	.272	1.280	1.154	-1.034	3.593
Context Analysis	Equal variances assumed	2.770	.102	1.840	55	.071	1.919	1.043	-.171	4.009
	Equal variances not assumed			1.829	48.382	.074	1.919	1.049	-.190	4.028

Table 15 - Area and Gender Independet Samples Test - Sample

Levene's test for equality of variances gives a p-value (Sig) always greater than 0.05. Therefore we can consider the variances as equal and consequently consider only the first lines of the table.

Considering the T-Test of equality between the averages (Null Hypothesis), we note a p-value always higher than 0.05 (Mr 2-tailed). Consequently, we cannot reject the null hypothesis of equality between the means of the control group by gender. The fact that 0 is within the confidence interval also reinforces this conclusion.

The descriptive statistics show that the average values obtained by males and females in the sample group are different, but this difference is not statistically significant.

Statistical analysis between areas and different age groups in the sample

We now want to test the null hypothesis H_0 that the average results by age are the same across the sample areas.

The One-Way Anova test is used (as the independent variable is qualitative and has a number of values greater than 2).

A requirement for the ANOVA test is that the variances of each comparison group are equal. This condition is tested using the Levene statistic. What is sought here is a significance value greater than 0.05, since a different result would suggest a real difference between the variances (**Homogeneity of Variances**).

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Emotional Maturity	1.527	4	52	.208
Action Finalization	1.567	4	52	.197
Relational Fluidity	1.097	4	52	.368
Context Analysis	2.036	4	52	.103

Table 16 - Test of Homogeneity of Variances

In our example, as you can see above, the significance value of Levene's statistic based on a comparison of medians is always greater than 0.05. This is not a significant result, which means that the requirement for homogeneity of variance has been met, and the ANOVA test can be considered robust.

To obtain the result of the **ONEWAY ANOVA test** we look for whether the value of F, which appears in the row between the groups, reaches the level of significance (Sig. <0.05). If this is not the case, the null hypothesis cannot be rejected.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Emotional Maturity	Between Groups	2.332	4	.583	.033	.998
	Within Groups	932.720	52	17.937		
	Total	935.053	56			
Action Finalization	Between Groups	38.631	4	9.658	.474	.754
	Within Groups	1058.421	52	20.354		
	Total	1097.053	56			
Relational Fluidity	Between Groups	45.292	4	11.323	.573	.683
	Within Groups	1026.848	52	19.747		
	Total	1072.140	56			
Context Analysis	Between Groups	109.195	4	27.299	1.785	.146
	Within Groups	795.471	52	15.298		
	Total	904.667	56			

Table 17 - Anova test for Age

In our sample, we do not have a significant result. No F-value reaches a significant p-value (Sig.) (below the alpha level .05). This means that there is a statistically significant difference between the areas for different ages.

5. Discussion

As shown by the data analysis, the sample of athletes achieved a higher mean result (6.38) than the control group for the area of Emotional Maturity (Tab. 6), as well as for Action Finalization and this difference is statistically significant -7.88- (Tab. 8). The statistics show that the sample also scored higher on average than the control group for the Relational Fluidity area and this difference is statistically significant (6.972) as well as for the Context Analysis area (8.119) – Tab. 10, 12 –. Descriptive statistics show that the mean values obtained by males and females in the sample group are different, but this difference is not statistically significant.

Statistical analysis between the areas and the different age groups in the sample shows that the sample of athletes is younger than the control group. It was not possible, in fact, to find subjects with cognitive disabilities young, this, could mean that the trend is to include in the sports offerings also children with disabilities. We can therefore confirm the research hypothesis that maintained that through the learning developed by motor activities and the environment in which they are carried out, improve the skills of individuals with cognitive disabilities in different areas and that the skills acquired develop life skills. Starting from the assumption that in people with cognitive disabilities there is a strong component of self-evaluation, we can argue that developing the personal autonomy of these subjects also strengthens their self-esteem, which is closely related to their cognitive Self and their motivation to learn. Self-esteem, in fact, significantly determines the outcome of any learning process (Mariani, Marcolongo, 2019). Therefore, not only does the emotional Self affect the motivation to learn and the willingness to engage, but in parallel also plays an important role the "Cognitive

Self", that is, the image that each person has of himself in relation to his own abilities, knowledge and learning (Galanti, 2020).

The relationship between disability, self motivation, unfortunately, is a dynamic that is not very deepened, but that deserves further study. Unfortunately, many sports activities for cognitively impaired users have been limited, if not discontinued. We should, therefore, evaluate the possibility of a follow up to verify that the skills acquired have not waned.

Conclusions

As research shows, in volleyball body and mind are directly conditioned by the action of other companions, therefore we must be good at adapting to situational variables, made unreliable and unpredictable. The experience already lived and one's previous sensory-motor experience, allow perceptual discrimination between the actions in progress and those that are undertaken. Greater is the experience in carrying out a certain action, greater is the ability to discriminate it in favour of a positive and effective result (Ceciliani, 2018). Sport represents the space of experience where sensory perception refers to the body as a starting point from which it's possible to both experience concrete situations in first person perspective, and to live the dialogical relationship between the environment, body and consciousness (Collison & Hockey, 2009). A distinction is made between action of sport (executive technique) and action in sport (strategic-tactical application), according to the paradigm of closed-convergent behavior (Ceciliani, 2018), also called closed skills (comparison activity in which motor behavior anticipation is certain and free from possible external interventions that may prevent it) and open-divergent behavior (open skills: confrontation/opposition activities, individual or team, in which motor behavior anticipation cannot be certain for the high variability of the context).

In open skills context, embodied cognition is implemented within a *mental rotation* that affects the situation as a whole according to an allocentric perspective that helps simplify the interpretation of possible body configurations, inserted in a three-dimensional space, anticipating intrinsic particularities deduced from the body of other subjects. According to this allocentric motor anticipation, players can get important information to choose actions, properly adapted to the situation or problem in which they are immersed (Hockey, 2007). This collected data analysis clearly demonstrates how much physical activity can implement all the areas taken into consideration, consequently improving the life skills of the athletes (Damiani, Tafuri, & Paloma, 2019). Sport was an extremely educational context in which the subject undertook experiences, in which attention to the movement of his body (closed skills) and attention to the actions of other athletes and the consequent transformations related to environment on the basis of which to decide and calibrate one's actions (open skills). Through the simulation, the subjects were able to transfer skills even in situations related to daily life. In conclusion, it remains critically important to implement structured sports training offerings for individuals with cognitive disabilities. But it is also important that instructors are prepared and trained not only in the motor aspect, but also in the psycho-educational and didactic aspect.

The control, organization and preparation of the environment, are fundamental to the educational approach and motivate the user in learning (Morsanuto, Marsico, Peluso Cassese, 2019).

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