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QUALITATIVE ANALYSIS OF PARABADMINTON'S PSYCOPHYSICAL AND SOCIAL IMPACT

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To my love Francesca

ABSTRACT

The purpose of this scientific research was to qualitatively assess the benefits reported by the practice of Para-Badminton in physics, psychological and social. The survey sample consisted of 40 professional athletes Para-Badminton, of which 25% women and 75% men, mean age of 37 years, between 14 and 57 years and recruited between March and August 2017. They have been involved in 17 different countries, including Singapore, Brazil and Nigeria, the most represented are Italy with 12 subjects. The Quality of Life has become a primary goal of the company, since it assumes a significance for the prevention and protection of the most vulnerable communities, such as the elderly and disabled.

In individuals with disabilities, upon reaching the functional clinical stability, it is possible to intervene with the Adapted Physical Activity, which is not an activity of rehabilitative, but it serves to strengthen the lost agility and it provides numerous physical and physiological benefits.

Numerous scientific studies have shown that the adapted physical activity, measured by the scale of the SF-36 Quality of Life Assessment and WHOQOL-Bref, brings significant benefits in physics, psychological and social and personal relationships. Among the many sports that are viable options for physical activity adapted Para-Badminton is definitely a sport still little known and studied.

The athletes were given a questionnaire, devised in collaboration with the doctors of the Department of Physical Medicine and Rehabilitation of the University Hospital TorVergata in Rome and translated in English and Spanish for international athletes. The questionnaire showed that most of the athletes knew that activity through sports or through personal contacts, only one respondent instead it came to knowledge through a rehabilitation facility. Most of the athletes is satisfied by the practice of Para-Badminton and believed to have a positive influence on one's health.

In a physical environment, in almost all cases, there was an increase agility, reaction capacity, coordination, strength and muscle tone and strength. Psychologically improves self-esteem, self-confidence and reduces feelings such as anger, stress, depression and anxiety.

Finally in the social sector it has been especially noted improvements in relationships and in the performance of activities of daily living. It seems that the Para-Badminton can be a sport that brings many benefits both in physics, psychological and social. His practice could greatly affect the Quality of Life of Persons with Disabilities. Therefore it is appropriate to carry out outreach work, information and participation especially in rehabilitation facilities that are an important reference point for people with disabilities.

INTRODUCTION

The English author Chris Bradford, in his book, published in 2008 "Young Samurai. The Way of the Warrior" states:

"Disability does not mean inability. It simply means adaptability."

Since ancient times, the concept of disability was attributed a negative connotation, arousing in the era communities, such as the Greek, contempt and ostracism of physical diversity, in a context where the perfection and beauty were the essential canons of society. For example, the philosopher Aristotele argued that, for Greece, babies with disabilities were a waste of resources for the community. Others believed them divine punishment result of the wrath of the gods and then, in case of natural disastrous events, subjects to be sacrificed to appease the will of the gods.

Even among the Romans, who had inherited from Greek worship of beauty and perfect, there were folk beliefs that identified disabled people as a disgrace to the whole race, and then as a subject to be put away, leave and let die because of unworthy. They are juxtaposed to the gods, because of their disability[1]. It is only during the Enlightenment, during which states the medical science, that disability is beginning to be classified in categories and treated in hospitals. In the second half of the last century, around the 70s, judgment on disability is totally revolutionized, thanks to the approval of regulations that affect the consideration of the term disability from crippled in a disability and therefore have equal rights to non-disabled. In Italy, we remember the Basaglia Law No. 180 of 1978, "Investigations and volunteers and mandatory medical treatment", which effectively closed psychiatric hospitals and the Law 517 of 1977, "Regulations on the assessment of students and the abolition of the examinations repair and other education changes introduced "

According to data collected by the World Health Organization in 2012, about 15% of the world population lives with a disability, of which 2-4% have significant difficulties in the

[1] Breve storia della disabilità, Cario M., 2014. La disabilità nella storia, Stilo S., 2013.

operation. This estimate is a marked increase compared to previous research carried out in the 70s, which reported figures of 10% of the population[2].

During the last decades, there has been a gradual change in the approach of society towards people with disabilities, especially in sports. The term "disabled sports" refers to any form of organized physical activity, aimed especially at people with disabilities. On the contrary, the sport for able-bodied, is indicated by the term "mainstream sport", or traditional sport[3].

The ParaBadminton is a relatively new sport, in fact it was recognized in 1996 by the founders dell'IBAD, the International Badminton Association for the Disabled. Subsequently, in 2011 the BWF (Badminton World Federation) officially became the governing body of the sport. The world federation organizes since 1998 every two years, the ParaBadminton World Championships, the most important sporting event of the sport, in which the best athletes in each category, the first edition was disputed in Holland, Amerfoort.

The ParaBadminton officially make its debut at the Paralympic Games in Tokyo 2020: the Management of the ICP (International Paralympic Committee Board), after the important steps taken by the Continental and World Federations, on October 7, 2014, announced the inclusion of the discipline sports program in Tokyo 2020. the announcement was ratified January 31, 2015 during the IPC meeting held in Abu Dhabi, United Arab Emirates, proceeding to formalize, for the first time, the inclusion of Badminton in the Paralympic program. Japanese edition, are planned in total 90 seats for the athletes, without distinction of sex or category, which will compete for the victory in 14 Medal Event. The qualification system at the Paralympic Games in Tokyo in 2020,

In addition to the sport, it will be included in the other 22 Paralympic Games in Tokyo in 2020: athletics, archery, badminton, bowling, canoeing, cycling, horse riding, football 5-a-side, goalball, judo, powerlifting, rowing, shooting, sitting volleyball, swimming, table tennis, taekwondo, triathlon, wheelchair basketball, wheelchair fencing, wheelchair rugby and wheelchair tennis.

As for Italy, the Council of 20 July 2016 the CIP (Italian Paralympic Committee), recognized the Italian Badminton Federation as a Paralympic Sports Federation. There have been several initiatives implemented in Italy to promote the inclusion of people with disabilities in the practice of Badminton, among which should be mentioned in April 2013, the agreement between the FIBa and CIP in order to initiate and develop business competitive and

[2] http://www.who.int/disabilities/world_report/2011/report/en/.

[3]Constructing Diverse Sports Opportunities for People with Disabilities. Journal of Sport and Social Issues, Nixon, H., L. II, 2007.

promotional technical sport of Badminton reserved for disabled athletes. By virtue of the provisions of that Convention, they have been implemented and implemented numerous projects on the territory with the involvement of all federal sectors.

In June of 2015 Italy makes its debut at the international level with the involvement of Lt. Col. Army Italian, Roberto Punzo athlete in the Paralympic Sports Group of Defense to Irish International Tournament, which two months later also participates in the England World Championships held in Stoke Mandeville between 8 and 13 September.

In 2016 it was organized the 1st National Circuit Para-Badminton, consisting of three tournaments (Rome, Palermo and Milan), before which a classification procedure has been planned to allow the competitive activity of the participants and the compilation of a first national Ranking.

1. SPORT, DISABILITY AND QUALITY OF LIFE

1.1 QUALITY OF LIFE

The Constitution of the World Organization of Health (WHO) defining the Quality of Life (QoL), states that:

"With the quality of life refers to the perceptions that people have of their position in life in relation to the cultural context and value system where they live and with respect to their goals, expectations, standards and interests. It is a very broad concept which covers, in a complex way, the physical and psychological health of each individual, the level of independence, social relationships, personal beliefs and relationship with the salient features of the environment"[4]

We can point out that this is a concept entirely subjective, individual perception, which can have a positive or negative aspect, its a given context. According to WHO, the Quality of Life, is a broad concept affected in a complex way the physical, the psychological, from the person's autonomy level, from social relationships, personal beliefs and personal relationship with ' environment in which he lives. To evaluate and measure the quality of life of a subject, they are used rating scales such as the questionnaire WHOQOL-100 and SF36 scale. In the first case, the questionnaire consists of six broad domains:

1) Body: energy and fatigue; pain and discomfort; sleep and rest.
2) Psychological: positive or negative feelings; moods which, concentrating, thinking, self-esteem.
3) Level of independence: Working; mobility; daily activities; drugs.
4) Social and Personal Relationships
5) Environment: financial resources, safety, health, home.
6) Religion, personal and spiritual beliefs.

[4]World Health Organization. Constitution. WHO, 1948

The scale of evaluation SF-36, is a questionnaire about the patient's state of health that is characterized by a short (on average about 10 minutes are used for the compilation) and the accuracy (the instrument is valid and reproducible). Developed in the US in the 80's as a generic questionnaire, multi-dimensional structured through 36 questions that allow you to assemble 8 different scales. The 36 questions will relate conceptually to 8 health domains:

1) AF-physical activity (10 questions)
2) RP-role limitations due to physical health (4 questions)
3) RE-role limitations due to emotional problems (3 questions)
4) BP-physical pain (2 questions)
5) GH-perception of general health (5 questions)
6) VT-vitality (4 questions)
7) SF-social activities (2 questions)
8) MH mental health (5 questions)

and a single question on the change in health status. The SF-36 questionnaire can be auto-filled, or it may be the subject of a telephone interview is both face-to-face. All SF-36 questions, except the last, referring to a previous four-week period to complete the questionnaire[5].

Through the use of such questionnaires, of which they have been extensively studied and shown to be valid, by administering them to known groups of patients in different studies, we can therefore say that the Quality of Life reflects a subjective and individual perception of seeing satisfied their needs, the opportunity to achieve happiness and self-realization. The improvement in quality of life has become a primary goal of the company, since it assumes a significance for the prevention and protection of the most vulnerable communities, such as the elderly and disabled[6].

[5]Questionario sullo stato di salute SF-36. Manuale d'uso e guida all'interpretazione dei risultati, G.Apollone, P. Mosconi, J.jr Ware, 2000.
[6]What Quality of Life? The WHOQOL Group. WHO, Geneva, 1996.
WHOQOL, Measuring Quality of Life, WHO, 1997.

1.2 DISABILITY

In 1980, the World Health Organization published an important document entitled "International Classification of Impairments, Disabilities and Handicaps' (ICIDH), which are defined and distinguished for the first time, the concepts of: Physical Impairment, Disability and Handicap.

For impairment, it is defined as "loss or abnormality of a structure or function of a psychological, physiological or anatomical"; while disability is defined as "any limitation or loss (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being". Finally, nell'ICIDH, reference is made to the disability, such as "disadvantage resulting from an impairment or disability that in a certain subject limits or prevents the fulfillment of the normal role or in relation to age, sex and the factors sociocultural"[7]. This classification has a strictly biomedical approach, in which the state of health and disease are in a relationship of cause-effect, neglecting the relational component of the subject. During the World Health Assembly, held in Trieste May 22, 2001, it is approved by all WHO Member States: "The International Classification of Functioning" (the international classification of functioning disability and health) , commonly known by the acronym ICF. This publication sets out to revise the ICIDH defining, measuring and classifying the health and disability populations. The purpose of the ICF is "to establish a common language for health description and related conditions in order to improve communication between different users, including health professionals, researchers, politicians and the public, including persons with disabilities ". In fact, the ICF is used as a classification tool, clinical, research, statistical, social and educational policy for the insurance industry, labor, education environment. The importance of this document is that, in determining the health of a subject, they are understood, as well as the functions and body structures, environmental factors, the activity In fact, the ICF is used as a classification tool, clinical, research, statistical, social and educational policy for the insurance industry, labor, education environment. The importance of this document is that, in determining the health of a subject, they are understood, as well as the functions and body structures, environmental factors, the activity In fact, the ICF is used as a classification tool, clinical, research, statistical, social and educational policy for the insurance industry, labor, education environment. The importance of this document is that, in determining the health of a subject,

[7] International Classification of Impairments, Disabilities, and Handicaps, WHO, 1980.

they are understood, as well as the functions and body structures, environmental factors, the activity[8] and participation[9].

With the ICF, WHO focuses on the quality of people's lives and how we can improve it, by moving the object classification from impaired health status, including a general framework concepts as functional states and the involvement of an individual in various situations of life. It will classify individuals, but to contextualize the situation and the environment where these are located. We can conclude by saying that, with the ICF adds a psycho-social approach to that doctor the previous classification, by defining the concept of disability as "the consequence or result of a complex relationship between the health condition of an individual and personal factors, and environmental factors that represent the circumstances in which the individual lives"[10].

[8] Activity is the execution of a task or action by an individual.
[9] Participation is involvement in a life situation.
[10] International Classification of Functioning, Disability and Health (ICF), WHO 2001.

1.3 ADAPTED PHYSICAL ACTIVITY

The term “Physical Medicine and Rehabilitation”, is defined as "a medical specialist discipline activities such as teaching, research and care for the prevention, assessment and treatment of disabilities caused by congenital diseases originated or acquired".

This aims therefore to implement diagnostic interventions, therapeutic and evaluation in order to conduct the disabled to achieve the best possible level of quality of life, through the implementation of an individualized rehabilitation plan to need it. The working team consists of various professionals who are divided into three components: medical, health degree and social health. In the medical component will have the physiatrist and numerous medical specialists involved through medical consultations in the clinical management of the patient, as the neurologist, the orthopedist, the Cardiologist, the psychiatrist or urologist in order to allow the patient recovery, as it is possible on the physical, functional and psychological, as well as make it active again and independently in the employment context, family, school and social. Alongside the physiatrist, there will be other healthcare professionals, such as nurses, the Occupational Therapist and Physiotherapist. The latter assists the patient in functional recovery with regard to impairments and disabilities, whatever the cause. It uses what is known as therapeutic exercise, a learning useful to achieve a better quality mode prestativa and therefore useful tool to recover abilities lost due to a previous pathological event. whatever the cause. It uses what is known as therapeutic exercise, a learning useful to achieve a better quality mode prestativa and therefore useful tool to recover abilities lost due to a previous pathological event. whatever the cause. It uses what is known as therapeutic exercise, a learning useful to achieve a better quality mode prestativa and therefore useful tool to recover abilities lost due to a previous pathological event.

Once the individual's rehabilitation at the hands of these health professions, goes alongside the figure of a degree in Adapted Motor Activities, which plays a key role in helping the person undergoing clinical and functional stability in the recovery and prevention motor skills aimed at the physical well-being and sport, as well as to strengthen the lost agility, through a workout program tailored activities.

Adapted Physical activity is not an activity of rehabilitative, but intervenes in the chronic phase of the disease stabilized, or when the rehabilitation has exhausted his speech. It brings many benefits, among which we mention: the increase in lung function and cardiovascular

diseases; increased elastic force, coordination and psychomotor global organization; the decrease of triglyceride levels, insulin resistance and obesity[11].

[11] La Medicina Riabilitativa, Caruso I. Foti C., Roma, 2009.

2. QUALITATIVE ANALYSIS OF PARABADMINTON'S PSYCOPHYSICAL AND SOCIAL IMPACT

2.1 BACKGROUND RESEARCH

Numerous scientific studies have demonstrated the central role of physical activity in people with disabilities both in promoting recovery and enhancement of physical performance is in considerably improving the psychological and social aspects. For example, a study conducted in 2008 and published in the journal "*Prosthetics & Orthotics International*" investigates the relationship between physical activity and quality of life in a population of 75 subjects with amputation trans-tibial and trans-femoral. The study led to recognize the need for more education on the importance of physical activity in amputees as it promotes the health benefits. In a special way, thanks to the use of the WHOQOL-Bref, was recognized an improvement in the physical domain, especially in the athletic and functional; in the psychological domain of social and personal relationships. In addition, the sport should be implemented in a social environment conducive to it[12].

To confirm this thesis, in 2012 the "*Disability and Health Journal*" published a research on the influence of sports adapted on quality of life and the degree of personal and social satisfaction in people with physical disabilities, comparing individuals with disabilities who participated in adapted sports and subjects who did not participate. The study included 60 people with amputations and paraplegia divided into two groups according to sports participation (sedentary control group and one group active players). These two groups were given the WHOQOL-BREF, the scale on the WHO QoL of Health which measures the overall quality of life, in general, and another 4 domains (physical health, psychological health, social relationships and environment) and SWLS, the Satisfaction With Life Scale. The research found that scores inherent in the physical domain, psychological and social of the WHOQOL-BREF were significantly higher in the group relative to the control, thus

[12]Physical activity and quality of life: A study of a lower-limb amputee population, SA Deans, A. McFadyen, P. Rowe, University of Strathclyde. In: Prosthetics & Orthotics International, July 2008.

demonstrating that the adapted sport produces a significant improvement in satisfaction and the quality of life in people with physical disabilities[13].

Also it does not forget that, as argued by the 2004 study published in the "*American Journal of Preventive Medicine"* the degree of participation in physical activity of people with disabilities is affected by a multifaceted series of barriers and facilitators that are unique to this population. For example barriers and facilitators related to buildings and infrastructure, and then the environment; kind of economic issues; emotional and psychological barriers; information barriers; the degree of education and training or the availability of systems and / or the impossibility to access it. It therefore seems clear that we must carry out more research in order to develop intervention strategies to increase and enhance participation in recreational and fitness programs by individuals with disabilities[14].

Among the many sports that are viable options for adapted physical activity, the ParaBadminton is definitely a sport still little known and studied. However it has been widely studied in subjects Badminton populations without locomotor disability. It has been established that it delivers major improvements on health, as demonstrated by Stephen D Patterson, St Mary's University in his study concerning the impact of Badminton on cardiac markers in sedentary women. This research, conducted on 36 untrained females, found that regular exercise for a period of about 8 weeks, has led to great aerobic adaptations. Among them: the increase in the maximum absorption of oxygen, a reduction in heart rate, blood lactate in the running exercises; a decrease in blood pressure at rest, systolic, diastolic and the average; in addition to improvement in vertical jump, showing the possible use of Badminton in order to increase the strength and power[15].

According to WHO estimates, 15% of the world population has a disability. According to research from Lidija Petrinović, the Faculty of Kinesiology, University of Zagreb reported during the *7th International Scientific Conference on Kinesiology 2014* held in Opatija in Croatia, studies on disability should focus on what people are still able to perform and not on what the disability prevents them from doing. In fact, the ParaBadminton, as adapted

[13] Influence of adapted sports on quality of life and life satisfaction in sports participants and non-sport participants with physical disabilities, K. Yazicioglu, MD, F. Yavuz, MD, AS Goktepe, MD, AK Tan, MD, Department of Physical Medicine and Rehabilitation, Rehabilitation Center of TAF, Gulhane Military Medical Academy, Ankara, Turkey, In: Disability and Health Journal, 2012.

[14]Physical activity participation among persons with disabilities. Barriers and facilitators, JH Rimmer, PhD, B. Riley, PhD, E. Wang, PhD, A. Rauworth, MS, J. Jurkowski, PhD. In: American Journal of Preventive Medicine, 2004.

[15]The Impact of Badminton on health markers in sedentary females, S. D Patterson, H.Legg, AM Knowles, N.Brown. St Mary's University, Twickenham, UK, 2016.

sports, it is surely one of the ways in which the person can be realized as designed to meet the needs of individuals with disabilities, with the aim of involving players in his practice as accessible sports, fun and adapted[16].

Regular physical activity undertaken by people who at some point in their lives suffer from irreversible changes in the locomotor system, can in a relatively short time to bring good results in order to compensate for the lost function. It is commonly known that the participation of disabled people in sport is a great therapeutic and preventive measure. The concept of integration of disabled people through sport is omnipresent, especially in ParaBadminton, which due to its specific nature and rules, is perceived as a viable discipline, whose popularity stems from the potential for people with various disorders of the locomotor system participate in the game. The Polish researcher Małgorzata Janiaczyk, the Department of Physical Education University School of Physical Education in Wroclaw, ParaBadminton through his study, published in the journal Fizjoterapia in 2015, says that the typical competition of this sport for people with disabilities, improves self-realization and integration, an opportunity for a better and more satisfying life. Regardless of the type of disability, an important part of training is the ability to compete, to compete with other players in the same category in tournaments, rallies and games. Such comparisons not only bring benefits to training functional physical, but also psychological, with a chance to meet other people with the same disability. Finally, the sports competition increases self-control and motivation for further development It says that the typical competition of this sport for people with disabilities, improves self-realization and integration, an opportunity for a better and more satisfying life. Regardless of the type of disability, an important part of training is the ability to compete, to compete with other players in the same category in tournaments, rallies and games. Such comparisons not only bring benefits to training functional physical, but also psychological, with a chance to meet other people with the same disability. Finally, the sports competition increases self-control and motivation for further development It says that the typical competition of this sport for people with disabilities, improves self-realization and integration, an opportunity for a better and more satisfying life. Regardless of the type of disability, an important part of training is the ability to compete, to compete with other players in the same category in tournaments, rallies and games. Such comparisons not only bring benefits to training functional physical, but also psychological, with a chance

[16]Adapted sports - Badminton in perspective of different disabilities, L. Petrinović, Faculty of Kinesiology, University of Zagreb, Croatia. In: 7th International Scientific Conference on Kinesiology, Opatija, 2014.

to meet other people with the same disability. Finally, the sports competition increases self-control and motivation for further development opportunities for a better and more satisfying life. Regardless of the type of disability, an important part of training is the ability to compete, to compete with other players in the same category in tournaments, rallies and games. Such comparisons not only bring benefits to training functional physical, but also psychological, with a chance to meet other people with the same disability. Finally, the sports competition increases self-control and motivation for further development opportunities for a better and more satisfying life. Regardless of the type of disability, an important part of training is the ability to compete, to compete with other players in the same category in tournaments, rallies and games. Such comparisons not only bring benefits to training functional physical, but also psychological, with a chance to meet other people with the same disability. Finally, the sports competition increases self-control and motivation for further development with a chance to meet other people with the same disability. Finally, the sports competition increases self-control and motivation for further development with a chance to meet other people with the same disability. Finally, the sports competition increases self-control and motivation for further development[17].

Finally I would like to report a recent research published in the *Journal of Sports Sciences Pamukkale* in 2016 and conducted by Hakan Arif Katirci and Yüce dell'Anadolu University, Faculty of Sport Sciences in Eskişehir in Turkey, during the 2015 Para-Badminton Championship Turkey. This study was intended to identify such mental images (or metaphors) 60 ParaBadminton athletes associated with this sport. This research led to the conclusion that athletes have about 20 different metaphors associated to sports, such as: medicine, the carnival, the water, the blood and the life. Since the metaphors help people to understand the sense of self, they could be used in communication activities in order to persuade people with disabilities to participate in sports or just ParaBadminton[18].

[17]Parabadminton - sports dla osób niepełnosprawnych, M. Janiaczyk, Department of Physical Education, University School of Physical Education, Wrocław. In: Fizjoterapia, 2015.

[18] Effective Communication Images for Disabled People in Sports: A Case of Turkish Parabadminton Athletes, H. Katirci and A.Yüce, Anadolu University, Faculty of Sport Sciences, Eskişehir, Turkey, Pamukkale Journla of Sport Sciences, 2016.

2.2 RESEARCH GOAL

This work was created by 'direct experience during the internship took place in the last academic year at the Italian Badminton Federation. In this period I had the opportunity to attend the federal coach of the Italian national, Enrico Galeani, over the training of the Italian athletes of ParaBadminton at the Olympic Training Center in Rome Giulio Onesti.

The goal of the research is to build quality into evaluation of the benefits reported by the practice of ParaBadminton in the physical, psychological and social spheres.

2.3 MATERIALS AND METHODS

In the present study we used a questionnaire designed in collaboration with the doctors of the Department of Physical Medicine and Rehabilitation of the University Tor Vergata in Rome. I have personally distributed the questionnaires in Italian language, during the first and second stage of the "II ParaBadminton National Circuit", which took place in Rome on 29 and 30 April and Palermo on 17 and 18 June 2017, to the Italian ParaBadminton athletes. Subsequently, I translated into English in the questionnaire which was distributed, during the fifth stage of the international circuit of ParaBadminton that took place 22 to 25 June 2017, at the National Indoor Arena in Blancherstown, in Dublin city.

Finally, I created a form using the Google platform, containing both questionnaires, in Italian and English, which have been attached also the questionnaires in Spanish and Turkish translation. With this form we could reach a larger number of athletes: each has automatically received an email in which, after description of the aims of the research, was the GoogleForm attached link and then the opportunity to respond to the questionnaire. After the results were sent and recorded automatically by the platform. This method has been realized with the collaboration of the secretariat of the Italian Badminton Federation and the European Badminton Federation, through which it was possible to reach the European National Federations, and therefore their federal ParaBadminton technicians. The Badminton World Federation, held the present study of scientific importance and contributed to the dissemination of the questionnaire. We subsequently developed an electronic spreadsheet, using the Microsoft Excel program in order to fix and analyze the collected data. While there is an Excel file code, which is equivalent to the corresponding questionnaire, all of the collected data and subsequent analyzes were done in full respect of the Italian Privacy Law (Legislative Decree No. 196/2003 and subsequent amendments and additions). using the Microsoft Excel program in 2016 in order to fix and analyze the collected data. While there is an Excel file code, which is equivalent to the corresponding questionnaire, all of the collected data and subsequent analyzes were done in full respect of the Italian Privacy Law (Legislative Decree No. 196/2003 and subsequent amendments and additions). using the Microsoft Excel program in 2016 in order to fix and analyze the collected data. While there is an Excel file code, which is equivalent to the corresponding questionnaire, all of the collected data and subsequent analyzes were done in full respect of the Italian Privacy Law (Legislative Decree No. 196/2003 and subsequent amendments and additions).

2.3.1. The cohort

The sample under study consists of 40 subjects, of which 25% female and 75% male, mean age of 37.225 years, between 14 and 57 years, randomly recruited between March and August 2017.

They were involved 17 different nationalities, coming from four continents. The main one is Italian with 12 subjects (30%), in second place we have the Turkey, with 8 respondents (20%) and then Germany 3 subjects (7.5%). A smaller percentage of athletes come from Israel, Poland and Finland, respectively, with two respondents each (5% of the sample) and finally with one respondent each (2.5%) are England, Holland, Brazil, Colombia, Norway, Serbia, Northern Ireland, Wales, Spain, Nigeria and Singapore.

Regarding disability, 40% of the sample, ie 16 athletes, has suffered a spinal cord injury, while 22.5% (9 subjects) has been subjected to amputation; 15% (6 athletes) indicates another type of lesion outside of those listed in the questionnaire, such as those with Achondroplasia and 12.5% (5 athletes) has developed outcome of Polio. The 7.5% (3 athletes) suffered a brain injury in childhood and 2.5% (1 subject) a brain injury.

As regards the use in the daily life of aids, prostheses and / or orthoses 75% (30 athletes) say they use them, in the face of the remaining 25% (10 athletes) who do not use. Specifically, everyone is using aids for personal mobility, while 11 make use of aids for personal medical treatment; 13 respondents make use of aids in the workplace and / or leisure activities, and finally 9 athletes declare utilizzarne for communication and information and for the improvement of environmental conditions.

With regard to the time elapsed between the date of the accident and disabling the beginning of modified workout, an average result of 14 years, with a minimum of 3 and a maximum of 29 years. In addition, it must be said that 45% of athletes surveyed, representing 18 subjects, have a congenital disability.

With regard to the International Classification of ParaBadminton, in the analyzed sample, the majority of it, the 32.5% to 13 athletes is formed from the class Wheel Chair 1, while the 22.5% (9 athletes), from Wheel Chair class 2. A follow, we have the Standing Upper class 5, with 17.5% (7) of the respondents; Standing Lower 3 and 4, respectively, with 15% (6) and 5% (2). Finally, the class Short Stature 6, abuts with the 7.5% (3) of the sample analyzed.

In analyzing training data, 67.5% (27) of the sample declared to train with the presence of other disabled athletes, to cover the remaining 32.5% (13), practicing alone. In addition, 55% (22) of respondents claimed that performs more than 4 hours of weekly training, compared

with 20% (8) who trains four hours a week and 7.5% (3) who have been playing only two hours a week. It should also be noted that no athlete declares to train 2 hours or less per week.

Finally, in the data analysis of the "Adapted Physical Activity: ParaBadminton", 24 athletes representing 60% of respondents currently play sports than ParaBadminton, among which we can count: Sitting Volleyball, Golf, WheelChair Fencing, WheelChair Basketball, Swimming, WheelChair Tennis, HandBike etc ... but only 30% of respondents say they have practiced other sports before the accident disabling.

2.3.2 The questionnaire

The questionnaire consists of four sections that allow a clear and detailed data collection.

The first part is related to "Personal Details" of the subject and then to personal information, such as details, date of birth, gender and nationality of the same.

The second section is inherent in the "Disability", in which we investigate the disabling date of the accident, the type of lesion of the subject and the use aids, orthoses or prostheses and, in the affirmative case specifying which types.

The third section of the questionnaire, concerning the Adapted Physical Activity, and then the ParaBadminton. The interviewee, indicates the start date of workout adapted, its classification, the number of workouts per week, the total number of hours devoted to training and the presence of other disabled athletes during training conduct. I consider these important questions in order to evaluate and compare the differences in terms of the amount of training and the hours practiced in the sport, by different athletes present in the population, in order to achieve significant benefits in quality of life. In addition to having a broader view of the situation on the chance to meet with other players with the same problems and the possibility of sports competition that could increase psychological benefits as well as physical and motivation. Finally it is useful to technicians the knowledge to train individuals who have previously practiced sports or not, for example, similar to how the ParaBadminton WheelChair Tennis, for what concerns the physical preparation and adaptation of the sport disability.

Finally we ask the subject to indicate the possible practice of other sports, in addition to the previously ParaBadminton and disabling the accident.

The fourth and final part of the questionnaire is devoted to the pleasantness and benefits that the subject believes to receive from the practice of this sport in physics, mental and social.

In particular, we have investigated the personal satisfaction in the practice of this sport through a numerical scale from 0 to 10; the overall influence on health; on its ability to concentrate on its agility and / or reaction capacity and gross motor coordination. We then asked the subject to indicate whether the practice of ParaBadminton has increased: his strength and muscle tone; its resistance to stress and motor skills in the use of the wheelchair, for athletes who make use of this device. As regards the psychological field is asked to the subject to indicate whether the practice of ParaBadminton affects his mood and how, in a scale of 0 to 10. It is then asked to describe in a few lines, as the athlete feels after played physical activity. You are then asked to indicate if and how the ParaBadminton increases self-esteem of the subject, and if it reduces negative feelings such as anxiety, stress, depression and anger. Regarding the social sphere we felt it appropriate to assess the influence of sport on social life, in the management of leisure, in the performance independently of the activities of daily life and any improvements in the integration in the workplace and in ' working efficiency. She is then asked to describe in a few lines, like the athlete feels after performing physical activity. You are then asked to indicate if and how the ParaBadminton increases self-esteem of the subject, and if it reduces negative feelings such as anxiety, stress, depression and anger. Regarding the social sphere we felt it appropriate to assess the influence of sport on social life, in the management of leisure, in the performance independently of the activities of daily life and any improvements in the integration in the workplace and in ' working efficiency. She is then asked to describe in a few lines, like the athlete feels after performing physical activity. You are then asked to indicate if and how the ParaBadminton increases self-esteem of the subject, and if it reduces negative feelings such as anxiety, stress, depression and anger. Regarding the social sphere we felt it appropriate to assess the influence of sport on social life, in the management of leisure, in the performance independently of the activities of daily life and any improvements in the integration in the workplace and in ' working efficiency.

The form at the end of the questions asked, affix a signed declaration, where it is stated that the data collected will be used anonymously and exclusively for the purpose of gathering data for the preparation of this thesis work and not to third parties.

2.4 RESULTS

The majority of participants 55%, or 22 respondents indicating how the knowledge of ParaBadminton source, events related to sports. The 22.5% (10 subjects) indicates personal contacts and 12.5% and (5 athletes) social media, such as TV and the web, and finally 5% (2) of the athletes he has learned in school. It should be noted an important fact that emerges from this question, namely that only 1 interviewed sample said they had known the ParaBadminton in a rehabilitation facility, which has made by using the rehabilitation adapted physical activity of the subject.

Subsequently, we can detect that in the analyzed sample, there is a very high, which abuts with the 92.5%, equal to 37 respondents, with the score from 10 to 7, which is followed by a 7.5% degree of satisfaction from 6 to 4 and no athlete reported being satisfied with the practice of ParaBadminton. This satisfaction index is acknowledged with the 92.5% of the athletes who have claimed that the practice of the sport altogether positively affects their health, especially the 76.31% of them showed an improvement of the physical condition, while the 44.73% improvement psychologically, the 36.84% with regard to the mental sphere and 34.21% have obtained a benefit for society. In contrast, only 3 (7.5%) respondents said they had not perceived currently positive influence,

With regard to the evaluation in the physical domain, the respondents claim to have perceived, an improvement of their physical performance. Specifically, 97.5% of the athletes has noted an increase agility and / or reaction ability, motor coordination, strength and muscle tone, in 95% of respondents there was an increase in the concentration and in 92.5% of the subjects increased resistance to fatigue. Finally, the 92.30% of the subjects, who use a wheelchair, say they have improved the ability in its use.

In analyzing the collected data, in reference to the psychological sphere of respondents, we find that 97.5% and 92.5% of them, believes that the practice of ParaBadminton to impact positively on their mood and increasing self-esteem. In particular, they claim to predominantly receive benefits on the moral level (95% of athletes) and to a lesser extent at the physical level (50% of athletes). Finally, we note in psychology, which by athletes practicing this discipline contributions in an excellent manner, in 95% of cases, a reduction of those negative feelings such as anxiety, stress, depression and anger. It also registered a maximum influence on the self-confidence of 92.5%, in contrast, only two respondents claim not to have taken significant benefits.

As for the benefits reported by ParaBadminton in the social sphere, 90% (36 athletes) declares that the sport a positive influence on social life and conduct independently in daily life activities. Finally, there is the part of the 90% of the athletes surveyed, a further positive influence inherent to improved integration capabilities in the field of work efficiency and management of their free time.

2.5 CONCLUSIONS

Currently the sport in its entirety is a multidimensional and fundamental tool educational, educational, emotional and social. One element that combines physical activity to the recreational, promoting the well-being both physically and psychologically, as well as being a source of social inclusion and integration.

With this study I have tried to figure out if adapted physical activity, such as ParaBadminton, can produce benefits in the physical sphere, psychological and social support in a population of individuals with a disability, and whether the sport can be considered or become a means of fostering the social integration of disabled people.

It should be emphasized that almost all of the population investigated, reported an extremely positive feedback in the benefits of the practice of ParaBadminton. In particular, 96% of respondents reported benefits in physics, 94% psychological and 85% improvement in the social sphere.

This research showed many interesting insights for future studies related to the disability and sport and in particular the practice of ParaBadminton. The inclusion of the sport in the next editions of the Paralympic Games in Tokyo in 2020, means that the national and international federations of Badminton is a strategy in place to promote the Paralympic movement of the sport. In particular, as long-term goals set, it will be primarily promoting ParaBadminton, not only to increase the number of athletes and visibility but, also, to encourage physical activity and its benefits adapted for people with disabilities. In this sense, beyond the maximum federal bodies of sport, also the various national teams, could benefit from such research, in order to raise awareness of the sport of recent development by increasing the number of global athletes and identifying talented players. We should not forget the fact that the data collected shows that the ParaBadminton is an excellent tool to assist the integration of disabled people in the sports world, with significant and high benefits to this population psycho-social level, especially in 'soften negative feelings, such as stress, depression and anger.

Finally, I believe that this research could contribute to the creation of active cooperation among the different international federations ParaBadminton in order to get the best chance of equal opportunities in sport for the disabled. This does not mean that collaboration between federations is interrupted, but that in order to get results and better performance is crucial to intensify links and communication between them.

Once at the conclusion of this thesis, we can say that sport for people with disabilities has a right as a preventive element for emotional distress, physical, mental and social. It should be recognized as from the collection of scientific research data, we found that only 7.5% of cases (of 3 respondents), has become aware of ParaBadminton through school or to a rehabilitation facility. So the various sports bodies, society as a whole, rehabilitation centers and even school should promote to that effect the development of physical activity for people with disabilities, through concrete works of awareness, information and participation in sport regardless of conditions socio-economic and cultural conditions of the disabled, for example, by inserting the practice of ParaBadminton in a post-rehabilitation protocol. In these works we must greatly enhance the results produced by scientific research such as this, conducted in order to demonstrate the benefits gained from racing, in order to raise awareness that population svolgerne to practice on a regular basis. In this scientific research, it was found that the time lapse between the date of the accident and the beginning of modified disabling is an average of 14 years; from this we can detect a lack of promotional and information activities that induce a person with disabilities to consistently perform physical activity adapted in order to improve their quality of life. It should strongly enhance the results produced by scientific research such as this, conducted in order to demonstrate the benefits gained from racing, in order to raise awareness that population svolgerne to practice on a regular basis. In this scientific research, it was found that the time lapse between the date of the accident and the beginning of modified disabling is an average of 14 years; from this we can detect a lack of promotional and information activities that induce a person with disabilities to consistently perform physical activity adapted in order to improve their quality of life. It should strongly enhance the results produced by scientific research such as this, conducted in order to demonstrate the benefits gained from racing, in order to raise awareness that population svolgerne to practice on a regular basis. In this scientific research, it was found that the time lapse between the date of the accident and the beginning of modified disabling is an average of 14 years; from this we can detect a lack of promotional and information activities that induce a person with disabilities to consistently perform physical activity adapted in order to improve their quality of life. in order to raise awareness that population svolgerne to practice on a regular basis. In this scientific research, it was found that the time lapse between the date of the accident and the beginning of modified disabling is an average of 14 years; from this we can detect a lack of promotional and information activities that induce a person with disabilities to consistently perform physical

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APPENDIX 1

PERSONAL DETAILS

Surname

Name

Date of Birth

Age

Nationality

Gender **M** ☐ **F** ☐

DISABILITY

Date of accident causing disability (dd/mm/yy)

Type of lesion:

Spinal Cord Injury ☐

Brain Injury ☐

Infant Cerebral Paralysis ☐

Amputation ☐

Poliomyelitis ☐

Other (specify) ☐

Do you use any tipe of orthoses, prosthesis?

YES ☐

NO ☐

If yes, which of these aids do you use?

Personal care devices ☐

Mobility devices ☐

Furniture and fittings for home or other environments ☐

Aids for communication and information ☐

Aids for improving environmental conditions ☐

Aids for the workplace and / or leisure activities ☐

ADAPTED PHYSICAL ACTIVITY: PARABADMINTON

Date (dd / mm / yyyy) of the beginning of the adjusted training activity

Parabadminton Functional Classification:

WH1 ☐ WH2 ☐

SL3 ☐ SL4 ☐

SU5 ☐ SS6 ☐

Number of weekly workouts: 1 ☐ 2☐ 3☐ 4☐ + 4☐

Total number of training hours: 1 ☐ 2☐ 3☐ 4☐ + 4☐

Presence of other disabled athletes during training: YES ☐ NO ☐

Do you practice other sports than ParaBadminton? YES ☐ NO ☐

- If so, what:

Do you practiced other sports prior to injury: YES ☐ NO ☐

- If so, what:

PARABADMINTON PLEASANTNESS AND BENEFITS

1. **How did you know about Para Badminton?**

_____

_____

_____

2. **On a scale from 0 to 10 how satisfied are you with the practice of this sport?**

3. **Overall, would you say that the practice of this sport positively affects your health?**

YES ☐ NO ☐

- If so, how?

_____

_____

PHYSICAL SPHERE

4. **Do you consider that the practice of this sport has improved:**

- Concentration capacity YES ☐ NO ☐
- Agility and / or reaction ability YES ☐ NO ☐
- Motor coordination YES ☐ NO ☐

5. **Do you consider that the practice of this sport has increased:**

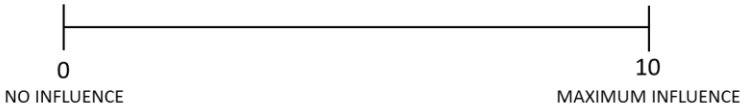
- Strength and muscle tone YES ☐ NO ☐
- Stress resistance YES ☐ NO ☐
- Motor skills for wheelchair use YES ☐ NO ☐

PSYCHOLOGICAL SPHERE

1. Do you consider that the practice of this sport has a positive influence on your mood?

YES ☐ NO ☐

2. On a scale from 0 to 10 how much does it affect your mood?



3. How do you feel after doing physical activity?

_____

_____

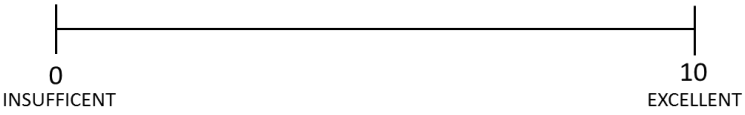
_____

4. Do you think that practicing this sport has increased your self-esteem?

YES ☐ NO ☐

5. On a scale from 0 to 10 how much does it affect your self-confidence?

6. On a scale from 0 to 10, how much do you think that the practice of this sport can reduce negative feelings such as anxiety, stress, depression, anger?



SOCIAL SPHERE

1. Do you think that the practice of this sport affects your social life?

YES ☐ NO ☐

2. Do you feel that the practice of this sport has improved your ability to blend in the work place / your work efficiency?

YES ☐ NO ☐

3. Do you feel that the practice of this sport positively influences the management of your free time?

YES ☐ NO ☐

4. Do you feel that the practice of this sport has a positive influence on the independence running through which you conduct your daily life?

YES ☐ NO ☐

Thanks for your kind cooperation.

The collected data will be used in anonymous form, exclusively for a data collection work for the elaboration of a thesis in Science and Techniques of Preventive and Adapted Motor Activities (Master's degree from the University of Rome Tor Vergata), drawn up by Dr. Stefano Alberti.

The data you enter will be processed for the purpose of the study and will not be transferred to third parties

Dr. Stefano Alberti Signature

_____ _____

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