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Research Article

The Psychological Impact of Leisure and Rehabilitation Activities in Children and Adolescents With Autism: A Delphi Approach

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Background. The leisure-rehabilitation programs offered to children and adolescents with autism convey feelings such as emotional, social, cognitive, and physical engagement, fun, adventure, and a sense of novelty. Each activity, however, has an intrinsic power to influence the emotional pattern in different ways.
Aim. To define how each type of rehabilitation program can be expected to influence the psychological response of children and adolescents affected by autism.
Methods. We applied the Delphi procedure during a workshop with 18 expert therapists (12 females, 6 males), with the aim of achieving consensus regarding the appropriateness of 11 types of leisure-rehabilitation activities in inducing seven types of psychological responses.
Results. The activities with the highest potential for each psychological response were indoor climbing for physical engagement, for sense of adventure, and for sense of novelty; team sports for social engagement and for fun; dramatherapy for emotional engagement; and writing your life story for cognitive engagement. The top five activities with the highest overall impact (mean overall score > 7) were, in decreasing order: indoor climbing, team sports, outdoor visits to common life environments, exercising in the swimming pool, and dramatherapy.
Conclusions. We hope that this Delphi exercise will help the carers of individuals with autism to choose and adapt possible leisure activities according to the specific needs of the subject, maximizing the potential benefit of rehabilitation.

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Introduction

Since the 2000s, a burgeoning strand of research has sought to verify how the activities carried out by the individual in the sphere of leisure time affect psychological well-being. The motivations that have led researchers to address this element can be found in the social and relational value that almost all activities have on the individual's psychological well-being. The available studies have focused on the relation between leisure and physical and psychological health through

cross-sectional or longitudinal surveys. The existing evidence seems to confirm the relevance of leisure in terms of health and well-being indicators, and in the literature, several studies can be found that seem to provide clear and solid evidence that leisure activities are beneficial for health. For example, there is evidence on the relationship between cultural attendance and life expectancy, showing that cultural access clearly improves chances of survival in longitudinal samples. A 14-year longitudinal study by Konlaan et al. (2000) investigated the possible influence of attending various kinds of cultural events or visiting cultural institutions as a determinant of survival [1]. The study found a higher mortality risk for those people who rarely went to the cinema, concerts, museums, or art exhibitions, as compared to those visiting them most often. Less beneficial effects were found for attendance at the theatre, church service, or sport events as a spectator, and no effect at all from reading or music playing. Furthermore, Hyppa et al. (2006) undertook a study concerning cultural participation as a predictor of survival on a sample of 8,000 Finnish, observing a lower risk of mortality among frequent attendees. In a similar way [2], Bygren et al. (2009) have examined the relationship between attendance at cultural events and cancer-related mortality [3]. The results of their longitudinal study on more than 9,000 participants show that those who were rare or moderate attendees were, respectively, 3.23 and 2.92 times more likely to die of cancer during the follow-up period than frequent attendees. However, this effect was observed only among residents of urban areas.

As to the relationship between leisure and individual psychological well-being, recent studies have provided some interesting insight. Daykin et al. (2008) have carried out a literature review to explore the evidence for the impact of performing arts on the health and well-being of young people in non-clinical settings [4]. They found evidence of positive effects of performing arts practice, including positive changes in reported behavior and improvements in social skills and interaction among young people at risk. Evaluating the impact of participatory art projects for people with mental health problems, Hacking et al. (2008) found that participation led to significant improvements in empowerment, as well as in mental health indicators and social inclusion. However, the actual relationship is likely to be more complex and multi-faceted than one could infer from these preliminary pieces of evidence [5].

Nummela et al. examined approximately 2,800 people belonging to a voluntary association in a district in southern Finland and found a strong and consistent association between different forms of leisure activities (art exhibitions, theatre, films, and music concerts) and self-reported health [6]. Laukka also identified significant associations between certain music listening practices and psychological well-being in a sample of elderly Swedes (65-75 years old) [7]. These data contribute to our understanding of the impacts of cultural activities on perceptions of well-being and health.

To the extent that culture is regarded as a leisure activity, Brajša-Žganec et al. show its important role in subjective well-being because it provides an opportunity to fulfil values and needs in life [8]. Through participation in leisure activities, people build social relationships, experience positive emotions, acquire additional skills and knowledge, and thus improve their quality of life. Their study, based on data from a representative sample of Croatian citizens (N = 4,000), shows that engagement in leisure activities contributes to subjective well-being, while the types of leisure activities considered important vary between different age and gender groups.

Grossi et al. have focused on the role of leisure activities in the general population in Italy [9]. The purpose of this study was to understand the impact of health status and cultural participation upon psychological well-being, with special attention to the interaction between patterns of cultural access and other factors known to affect psychological well-being. Data for this report were collected from a sample of 1,500 Italian citizens. A multi-step random sampling method was adopted to draw a large representative sample from the Italian population. Subjects underwent a standard questionnaire for psychological well-being [the Italian short form of the Psychological General Well Being Index (PGWBI)] and a questionnaire related to the frequency of participation in 15 different kinds of cultural activities during the previous year. The results show that, among the various potential factors considered, leisure unexpectedly ranks as the second most important determinant of psychological well-being, immediately after the absence or presence of diseases, and outperforming factors such as job, age, income, civil status, education, place of living, and other important factors.

All this premise is particularly true for young people with neuro-disability, who typically experience lower

levels of mental well-being and are at increased risk of mental illness compared with their non-disabled peers.

Children and adolescents with neuropsychiatric disorders have lower levels of mental well-being and higher levels of stress. For example, more than half of children with cerebral palsy and autism suffer from mental illness [10][11] which can easily persist till adulthood [12][13].

Children and adolescents with autism typically avoid social contacts, and social participation, conversely, is considered a protective factor against poor mental health [14][15]. Also, young people with other kinds of neuropsychiatric diseases have lower levels of social participation [16][17] which can allow friendships, learning new skills, and improving resilience and mental well-being [18].

Emotional well-being and happiness have received little attention in the field of autism. When we focus on well-being, we often do so from a negative perspective, that is, the lack of functioning that is assumed to play a key role in ensuring a good quality of life. Based on the principles of positive psychology, a change in perspective is appropriate. Instead of focusing on the lack of subjective well-being in children and adolescents with autism, strategies should be developed to facilitate their feelings of happiness. In this article, the focus is on the first and most important step to promote happiness in young people with autism, namely, evaluating how well certain activities make these subjects feel. The philosophy followed in our institute is to borrow rehabilitation from recreation, in other words, coupling leisure and rehabilitation to make our guests feel happy as much as possible.

We are aware that the leisure-rehabilitation programs offered to children and adolescents with autism, such as individual and team sports, drama therapy, outdoor visits to common life environments, parks and gardens, museums, music play, dance, indoor climbing, exercising in the gym, and in the swimming pool, convey feelings like emotional, social, cognitive, and physical engagement, fun, adventure, and a sense of novelty. Each activity, however, has an intrinsic power to influence the emotional pattern in different ways. To define how each type of rehabilitation program can be expected to influence the psychological response of children and adolescents affected by autism, a Delphi study was carried out involving twelve expert therapists. The aim is to have criteria to personalize the individual rehabilitation plan by choosing a mix of activities with a more appropriate emotional influence.

Methods

We applied the Delphi procedure during a workshop with 12 expert therapists (8 females - 4 males), with the aim of assessing the opinion of participants regarding the appropriateness of 11 types of leisure-rehabilitation activities in enhancing 7 types of psychological responses.

A two-round Delphi study was conducted in accordance with the Guidance on Conducting and REporting DElphi Studies (CREDES). The Delphi method was chosen as there is a lack of evidence to determine how to personalize leisure/rehabilitation participation for children and adolescents with autism in the best way. The Delphi method provides a rigorous approach to collating expert opinions from multiple perspectives while providing anonymity to individual participants, thus reducing the risk of power imbalances. Participants were informed during each survey round that they could withdraw at any time.

The selection of the clinical experts invited to participate in the study was based on the following criteria: (1) at least 10 years' experience in paediatric neuropsychiatric rehabilitation, specifically in autism, and (2) willingness to participate in the study. Microsoft Office Excel was used for the statistical analysis of the Delphi data.

The kinds of leisure activities are listed in Table 1, while the kinds of psychological responses are listed in Table 2.

Dance therapy
Dramatherapy
Exercising in the gym
Exercising in the swimming pool
Individual sports
Indoor climbing
Music play
Outdoor visits to common life environments
Outdoor visits to museums
Outdoor visits to parks and gardens
Team sports

Table 1. leisure - rehabilitation activities

doi.org/10.32388/P5EIRP.4

Emotional engagement
Social engagement
Cognitive engagement
Physical engagement
Just fun
Sense of adventure
Sense of novelty

Table 2. psychological responses

Each participant could vote from 0 (complete lack of appropriateness) to 10 (maximum of appropriateness), where 5 means doubtful.

The Delphi methodology is a structured process that uses interactions with experts via questionnaires to reach consensus on complex issues, preserving the anonymity of the participants.

Results

Figures 1-11 show the mean appropriateness scores attributed by the panel to each activity with regard to the seven psychological responses.

doi.org/10.32388/P5EIRP.4

Figure 1.

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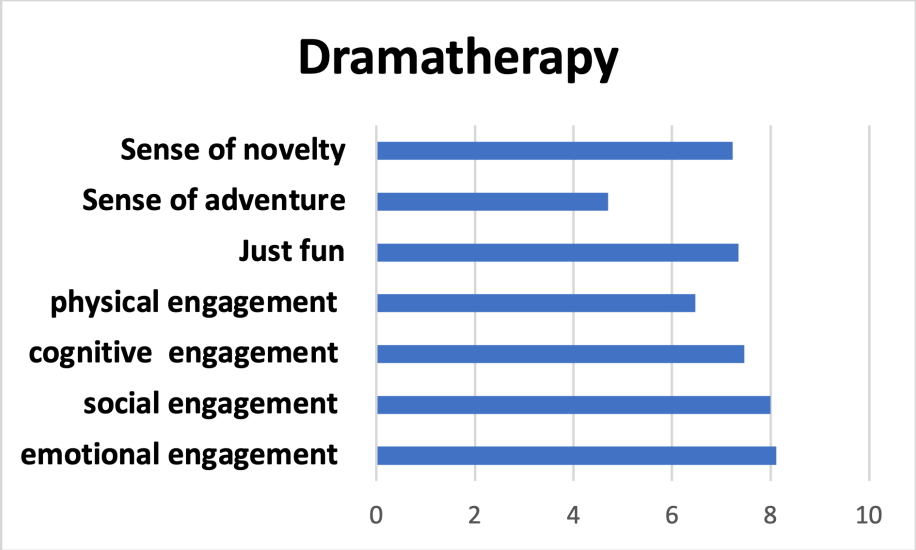

Figure 2.

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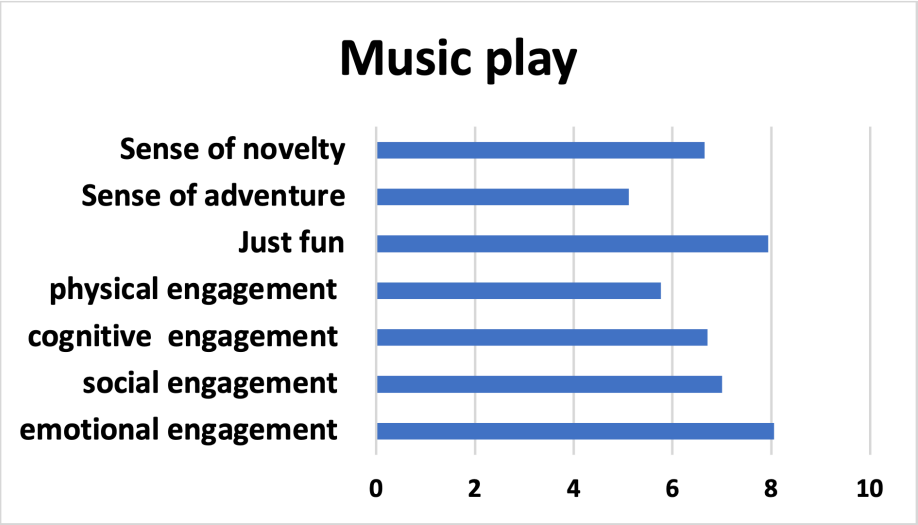

Figure 3.

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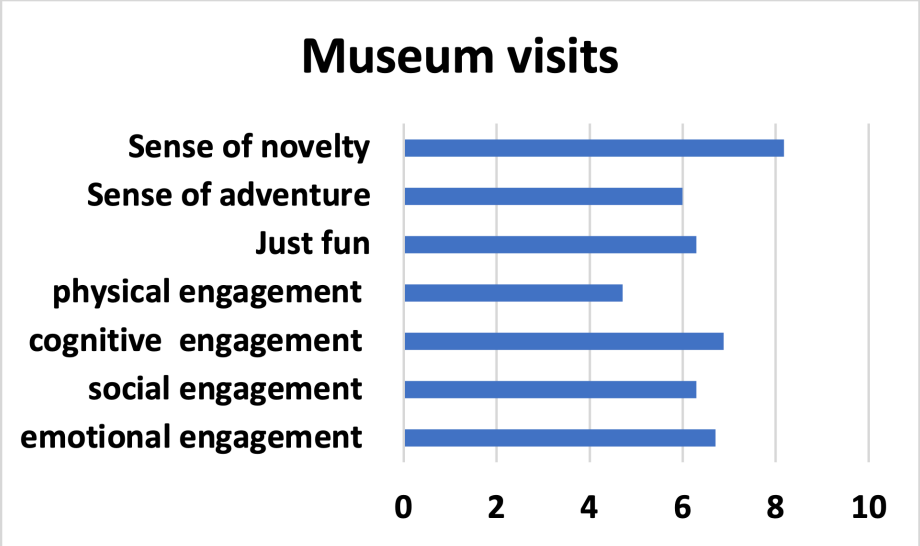

Figure 4.

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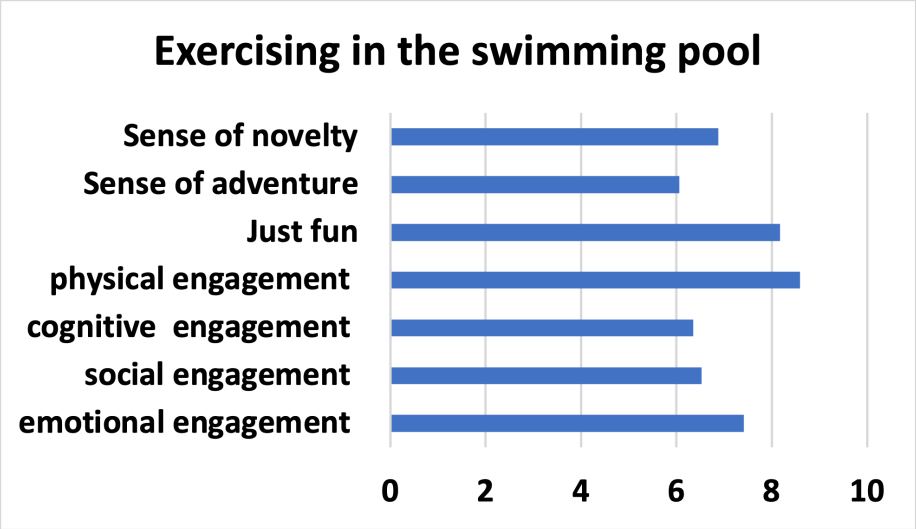

Figure 5.

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Figure 6.

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Figure 7.

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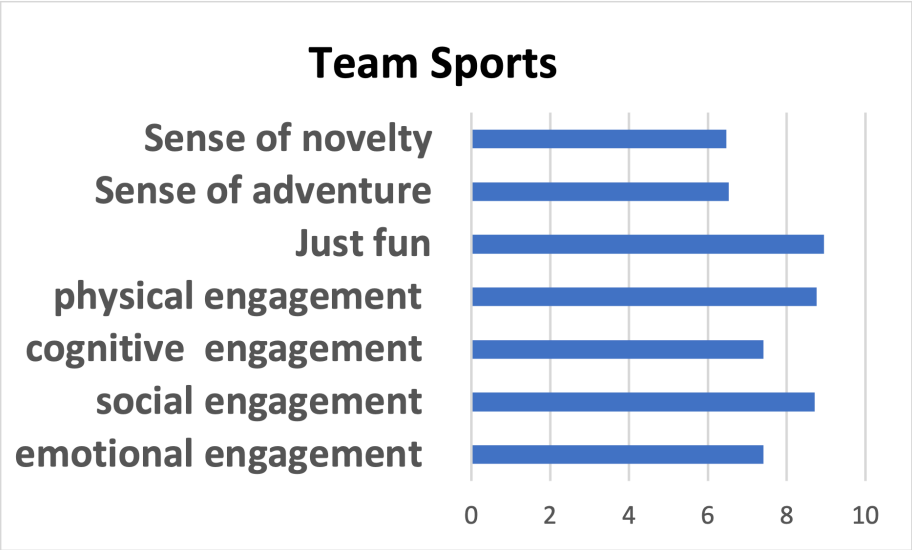

Figure 8.

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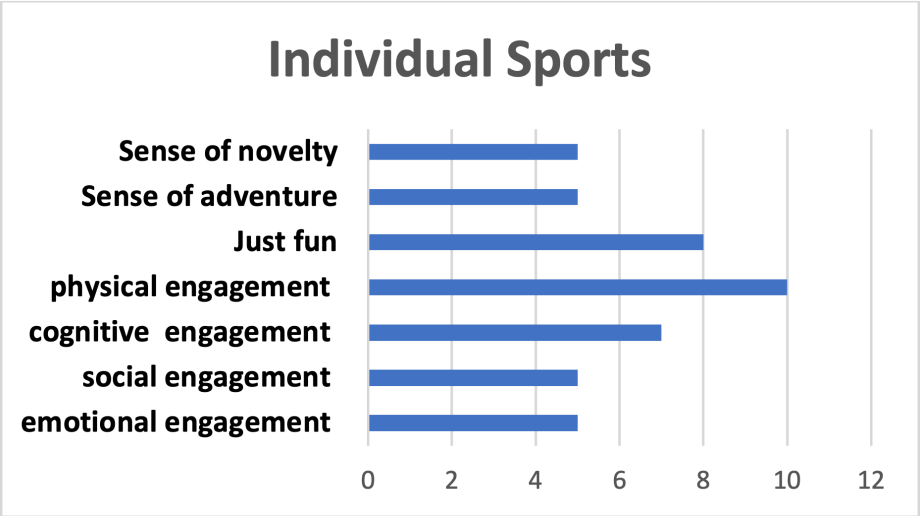

Figure 9.

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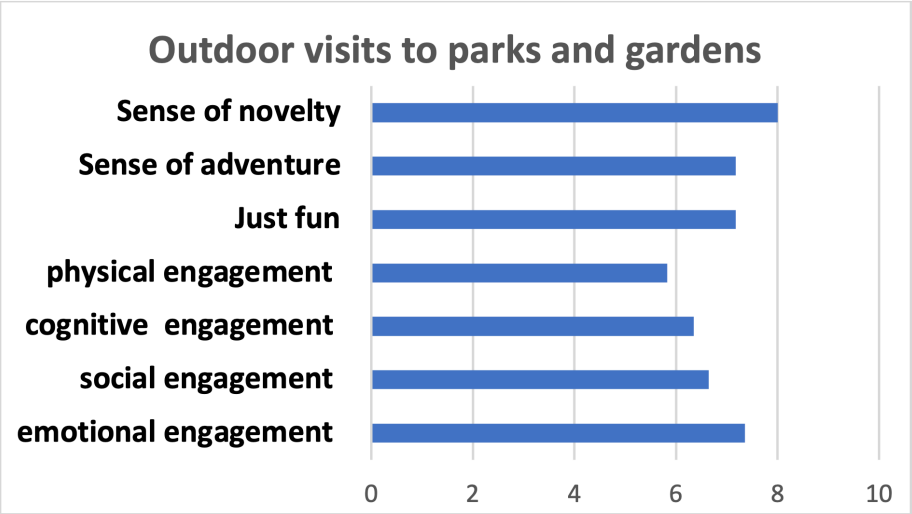

Figure 10.

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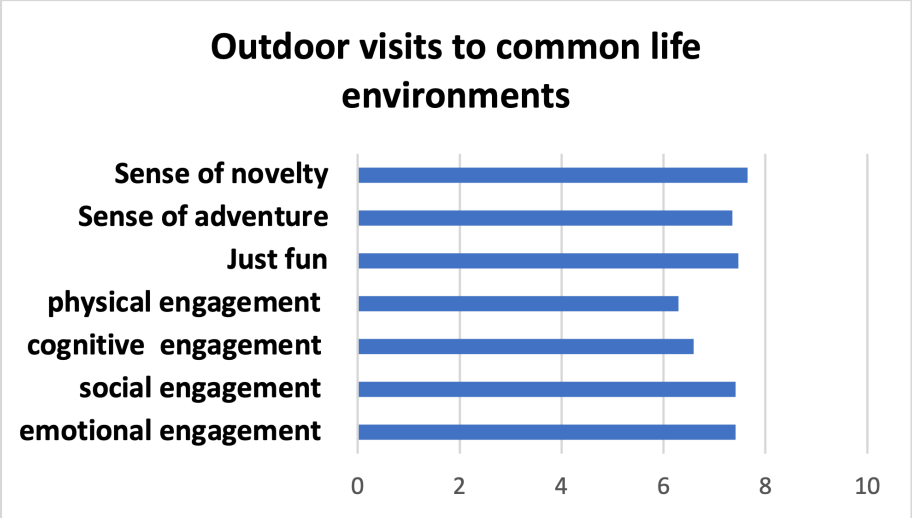

Figure 11.

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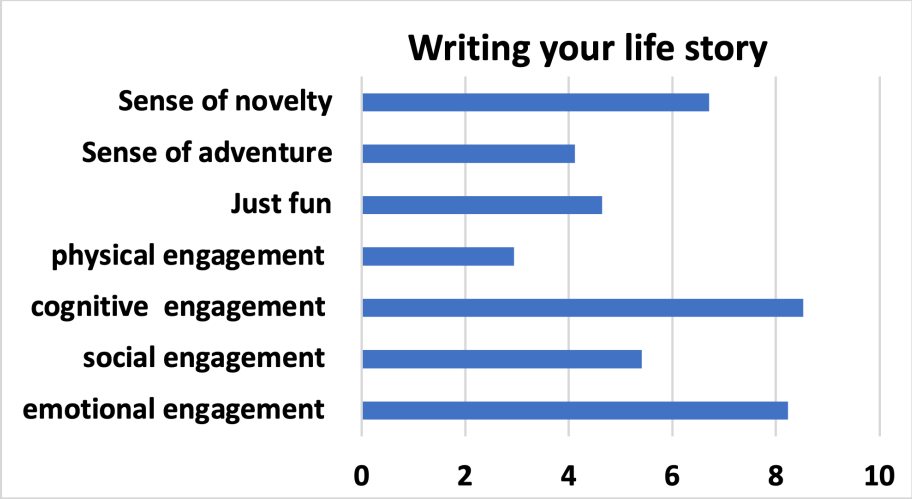

Figure 12.

Figures 13 – 19 refer to the ranking of appropriateness scores in each psychological response.

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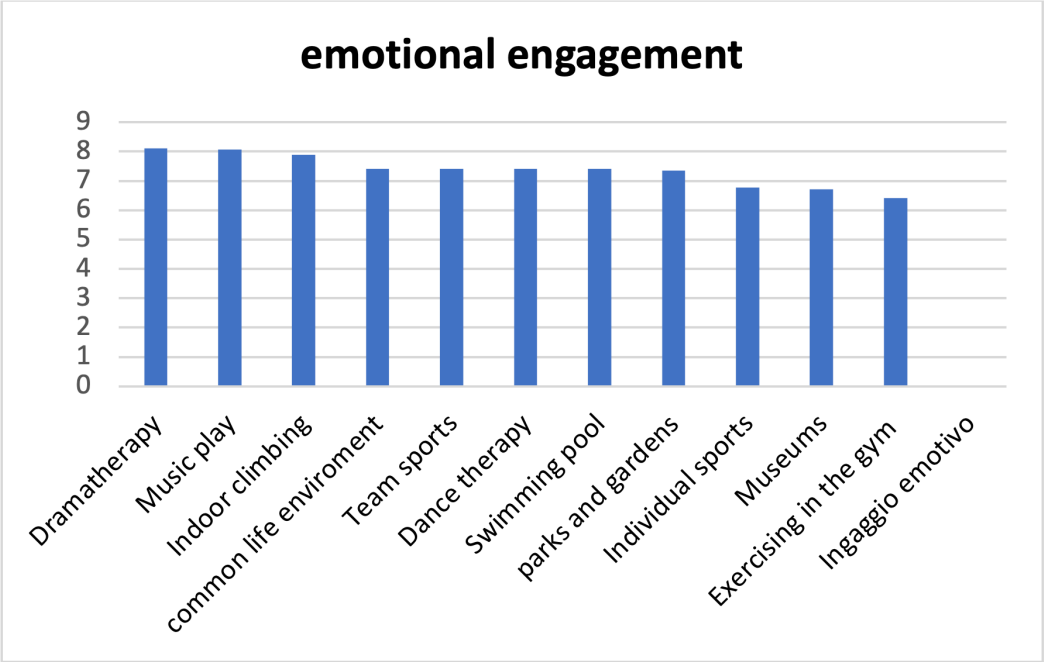

Figure 13.

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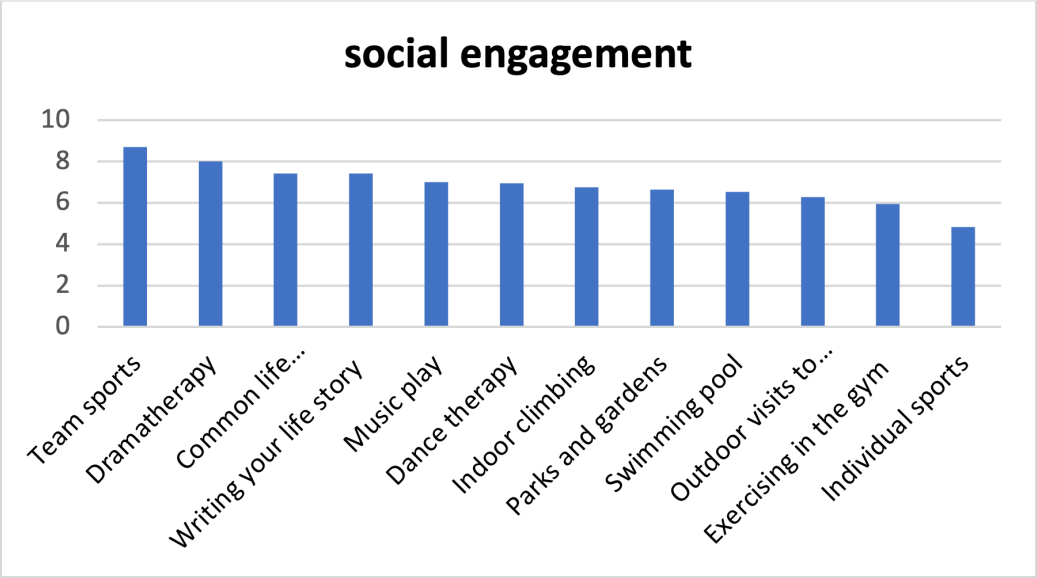

Figure 14.

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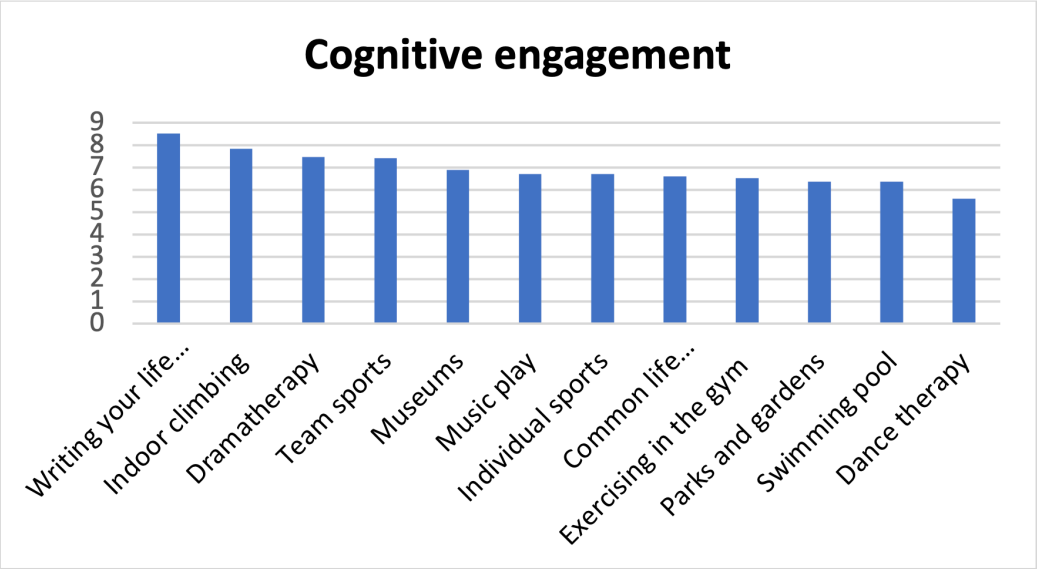

Figure 15.

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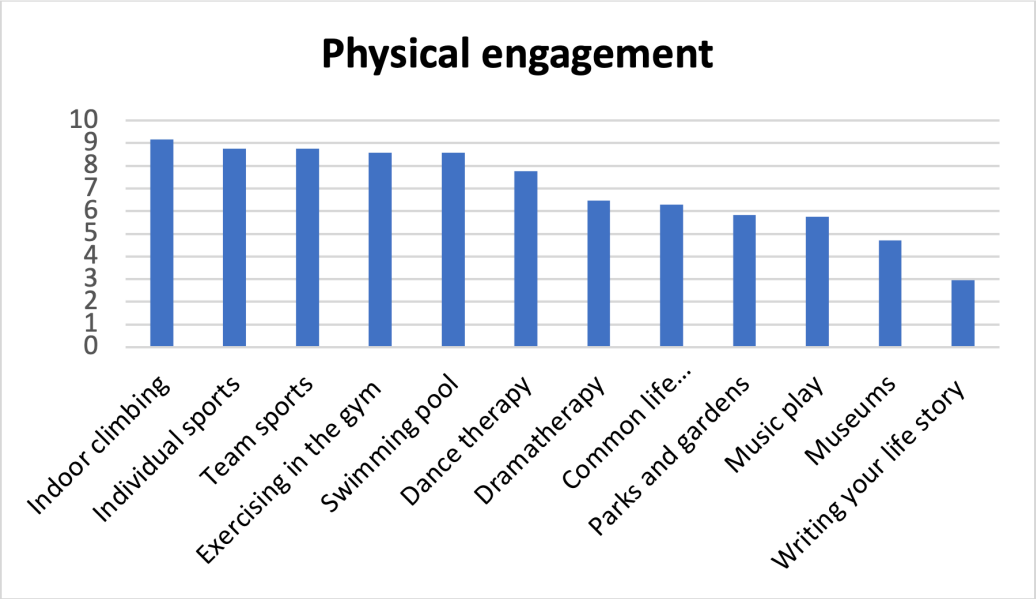

Figure 16.

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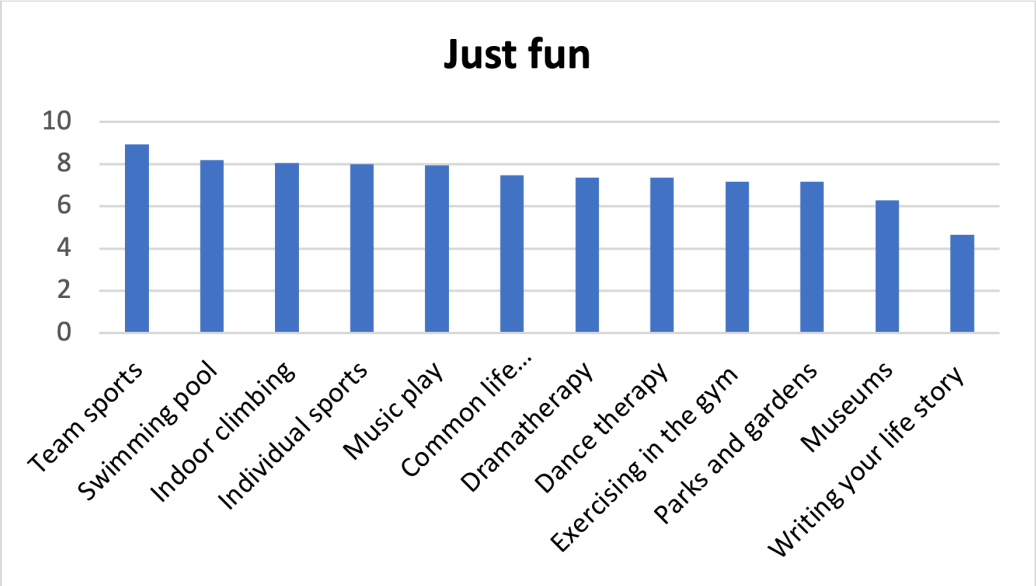

Figure 17.

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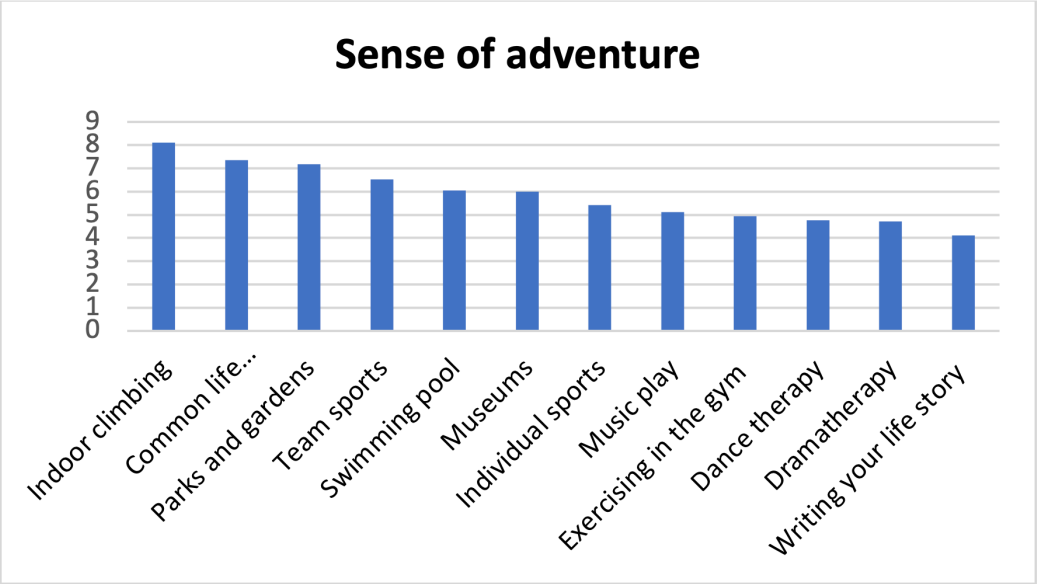

Figure 18.

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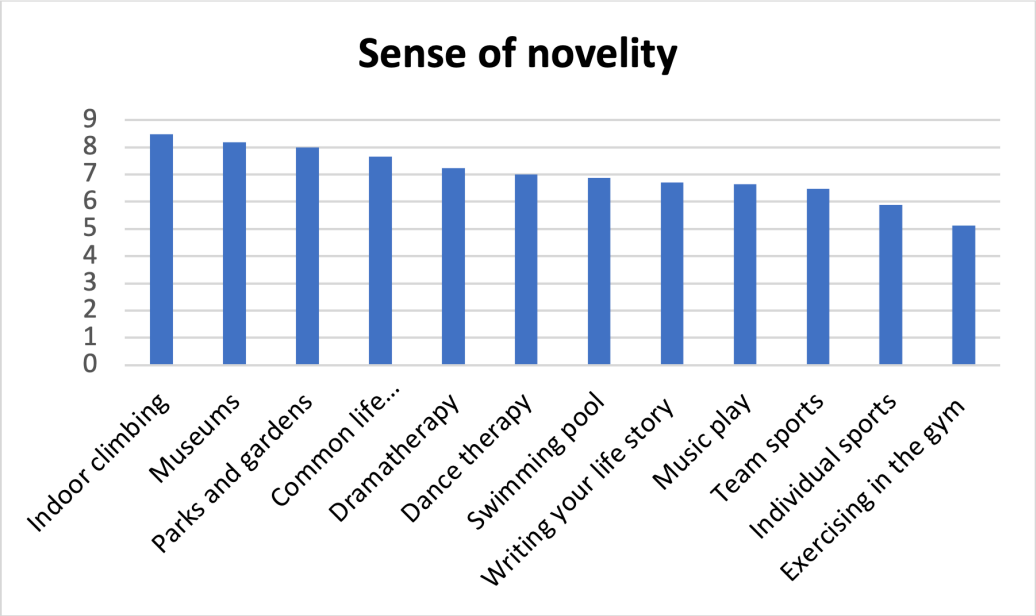

Figure 19.

Indoor climbing registered a good mean score (over 8) in four psychological responses (physical engagement, sense of adventure, sense of novelty, just fun) with an overall mean score of 8.04. Team sports registered three good mean scores (fun, physical, and social engagement). The overall score was 7.74. Outdoor visits to parks and gardens registered one good mean score (sense of novelty). The overall score was 6.93. Dramatherapy, as expected, registered a good mean score in emotional and social engagement. The overall score was 7.05. Exercise in a swimming pool registered, as expected, a good mean score in physical engagement and in just fun. The overall score was 7.14. Music play registered a good score in emotional engagement. The overall score was 6.74. A museum visit registered a good mean score in sense of novelty. The overall score was 6.43. Individual sport registered only one good mean score (physical engagement). The overall score was 6.51. In the same way, exercising in the gym registered a good mean score in physical engagement. The overall score was 6.38.

The activities with the highest potential for each psychological response were indoor climbing for physical engagement, for sense of adventure, and for sense of novelty; team sports for social engagement and for fun; dramatherapy for emotional engagement; and writing your life story for cognitive engagement. The top five activities with the highest overall impact (mean overall score > 7) were, in decreasing order: indoor climbing, team sports, outdoor visits to common life environments, exercising in the swimming pool, and dramatherapy.

Kappa statistic

Table 1 shows the Kappa statistic used to test interrater reliability. Activities are sorted according to decreasing order of Kappa value. We observed, as expected, an improvement in agreement with the second Delphi round. In this round, the activities with moderate agreement (k 0.41– 0.60) were: Exercising in the swimming pool, Individual sports, Exercising in the gym, Outdoor visits to museums, Dramatherapy, Team sports, Outdoor visits to common life environments. The activities with fair agreement (k 0.21–0.40) were Dance therapy, Indoor climbing, Outdoor visits to parks and gardens, and Music play. Writing Your Life Story registered slight agreement (k 0.01–0.20).

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	First round	Second round
Swimming pool	0.51	0.54
Individual sports	0.50	0.54
Exercising in the gym	0.47	0.52
Museums	0.45	0.5
Dramatherapy	0.45	0.46
Team sports	0.42	0.45
Common life environments	0.39	0.43
Indoor climbing	0.38	0.38
Parks and gardens	0.31	0.34
Music play	0.26	0.27
Dance therapy	0.19	0.23
Writing your life story	0.04	0.06

Table 3. Kappa statistic

Discussion

Looking at the different activities performed in our Institute, four activities deserve special attention, manifesting the potential to successfully cover the overall span of emotions: team sports, indoor climbing, dramatherapy, and museum visits. Let's start with those related to physical exercise.

It is well known that sports games exert positive psychological and cognitive effects on both healthy and disabled people [19][20].

Previous studies and reviews have highlighted the positive benefits of physical activity and exercise for people with ASD [21][22][23][24][25][26] regarding motor deficits [27], and improvements in cognitive, [28], behavioural, and social-emotional skills [29][30][31]. Although there is much evidence on the health benefits of exercise practices, less is known about the appropriateness of practising a sport for people with ASD. Apart from difficulties in balance, gait, speed of movement, motor control, and joint flexibility [32][33], the main problem in practising team sports for people with ASD resides in difficulties in social interactions; therefore, most sports offered consist of individual exercises like swimming, jogging, walking, horse riding, cycling, weight training, and dance. Anyway, it is important to insist on team sport activities just to strengthen social attitudes and communication skills [34].

Indoor climbing deserves special attention since it is a sport practice with strong emotional, social, and mental impacts (Figure 20).

Climbing benefits those with motor skill difficulties by making them aware of their body and movement in relation to their joints.

Problem-solving and decision-making are highly involved in climbing as individuals decide where to put their hands and feet as they are climbing. This also helps to think sequentially.

Gaining exposure to movement and sensory input can help with motor processing.

Climbing is an individual activity and thus a perfect activity for individuals who may not like physical contact, like some children with autism.

In our Institute, an indoor rock climbing programme was designed for children and adolescents with a range of disorders, among which is autism. This program features one-on-one attention and encouragement. Each child can therefore climb at his/her own pace.

The programme is designed to help children develop positive recreation skills, increase muscle tone and motor skills, develop trust and relationship-building skills, increase self-esteem and empowerment, promote independence, health, and wellness, and enjoy themselves in a safe and controlled environment.

Figure 20. Snapshot of a subject climbing in the gym.

Climbing requires complex motor skills. When we're climbing and moving our hands and feet independently, we are developing our cross-lateral movement, balance, and hand-eye coordination. These are vital to maintaining posture and muscular equilibrium, which are key to keeping us healthy throughout our lives.

The most important therapeutic benefits of climbing, probably to all of us, are the emotional, social, and mental impacts. Moreover, climbing can help children with autism in defying negative expectations and in building confidence in their own abilities. In a pilot study carried out in our institute on 6 male adolescents with autism aged 10-18 years, with one session per week for four weeks, we observed a strong increase (+ 30 - 80%) in momentary wellbeing at the end of the session, measured with a special analogue chromatic scale, and a marked reduction of negative feelings, measured with the POMS scale (a multidimensional scale for stress; momentary emotions).

What about dramatherapy? Dramatherapy has many points of strength: it promotes wellbeing, creativity, and expressiveness; focuses on relationships, inter-subjectivity, and emotional aspects (aspects also favoured by the group context); works centred on the body and the non-verbal aspects of communication; gives space for personal freedom within a protected and structured setting (more freedom than in behavioural therapies); facilitates the acceptance of variables through the creation of a fictitious context; stimulates imaginative thinking; exploits personal resources, e.g., imitative skills; and uses rituals that favour greater predictability and security. A pilot study carried out in our institute analysed the effects of dramatherapy on the following behaviours: difficulties in storytelling, difficulties in the recognition, expression, management, and representation verbalization of emotions, poor tolerance for frustration, poor self-awareness, rigidity of thought and action related to limits in imaginative thinking and creativity. Five male subjects (age 9-15 years) with autism (ADOS-2 Calibrated Severity Score 5-7) were studied before and after 23 weekly sessions of dramatherapy. A marked improvement in the outcome end points considered (Individual dramatic abilities, Psychlops questionnaire for wellbeing, CARS scale of autism severity, Six Piece Story Making, Clock of emotions) was observed.

Museum visits are gaining a reputation among practices able to impact psychological wellbeing. Museums promote health and well-being in different ways: through positive social experiences that reduce isolation, providing opportunities for learning and personal growth, promoting a sense of relaxation and reducing anxiety, triggering positive emotions, and improving self-esteem and sense of identity. A recent review of studies dealing with museums and wellbeing over the last 15 years highlights a number of physical and mental benefits of museum-going [35] like restoration, reduction of anxiety and stress, and wellbeing enhancement.

Our group carried out a pilot study to highlight the feasibility of an aesthetic experience in Museo Teatrale alla Scala in six subjects with autism aged (10-17). The experience consisted of a guided tour in the museum coupled with an opera performance in the exedra room of the Museo Teatrale alla Scala, such as the adaptation

of Mozart's Magic Flute. The measurement of the impact of this experience on psychological well-being, carried out using a special analogue chromatic scale, allowed us to establish a strong emotional impact with a statistically significant increase in momentary psychological well-being.

This pilot study suggests that a visit to a museum can stimulate parts of the brain that remain intact even after the onset of neuro-psychiatric diseases, and that the measurement of temporary wellbeing is feasible even in subjects with autism.

Coming to outdoor visits, we have been impressed by the fact that a simple outdoor visit to a common life environment, like gardening, can exert beneficial effects with an order of magnitude similar to more committing outdoor experiences. In recent years, the benefits of spending time outdoors to improve mental health and general wellbeing have been well documented. Taking a walk through woodland or participating in activities like gardening or bushcraft can offer many a calming yet energizing experience.

Experiences and activities revolving around the natural world pose a whole host of benefits for people with autism of all ages. Individuals with autism may experience becoming overwhelmed by numerous stressors that neurotypical people won't be affected by in the same way. Spending time in the natural world has the potential to reduce these feelings and can support individuals in gaining the tools they need to react more constructively to moments of anxiety, fear, or stress. According to the mental health organization Mind, taking the time to experience nature and appreciate green spaces can do far more than improve your mood and reduce feelings of stress. But also walking the streets of the neighborhood nearby, or entering a bar or a shop, is important, encouraging people to become more active and to develop new skills, improving confidence and self-esteem, providing opportunities to meet new people and to engage with the local community, and also reducing feelings of isolation and loneliness.

Our raters showed satisfactory agreement after two rounds of Delphi assessment. We observed only one controversial agreement in the case of writing your life story. This may depend on the fact that this activity has been introduced in our Institute only a few years ago.

Conclusions

The analysis of judgments on the emotional impact of eleven types of leisure-rehabilitation activities, made through a Delphi method with the help of twelve expert therapists, showed that they act in different ways on seven types of psychological responses. This varied potential allows for the modulation in clinical practice of the combination of activities to the specific needs of the subject in the best way, maximizing the potential benefit of rehabilitation.

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