Project "IFormaMentis"
Physical Activity: A Common Benefit

REPORT

A regular participation in physical activity brings significant health benefits in old people (Lachman et al., 2018). However, more than a quarter of adults aged 50 and above report being physically inactive outside of work, and this prevalence increases with age (Watson et al., 2016). While physical activity programs currently available can help older adults increase their physical activity, many people struggle to sustain this behavior beyond the program's conclusion (Sansano-Nadal et al., 2019). Additionally, the prevalence of pollution is another factor to consider (Tainio et al., 2021), and when addressing physical activity guidelines, the presence of initiatives like Projects plays a significant role (Heath et al., 2012). Since this significant Public Health challenge persists globally, in Italy there has been a reported concentration of physical inactivity in peripheral regions (ISTAT, 2021), Governmental campaigns promoting physical activity have been promoted. In this regard, this article represents a report on the "IFormaMentis – Bagno nella Foresta" project promoted by Sport e Salute S.P.A. has been accomplished by CISCOD (Italian Committee for sports against every drugs) in collaboration with three other Praise Associations: USSI (Italian Sports Press Union), CONAPEFS (National College of Physical Education and Sports Professors), and APEC (National Association of CONI Retirees). The CISCOD goal of this project, was to encourage people in engaging outdoor physical activity and to increase physical inactivity awareness, primarily involving central and southern Italy regions.

Scenario

Enjoyment and satisfaction in physical activity have been adopted as two operative mechanisms to promote sustained engagement in physical activity. An accurate analysis of how, why, and for whom these two mechanisms work (or do not work) in response to a particular intervention depends on the presence of appropriate measures for the target population (Huffman et al., 2021). Moreover, regular participation in physical activity brings significant health benefits in old age (Lachman et al., 2018). However, more than a quarter of adults aged 50 and above report being physically inactive outside of work, and this prevalence increases with age (Watson et al., 2016). While currently available physical activity programs can help elderly increase their physical activity, many struggle to sustain this behavior till the program's ending (Sansano-Nadal et al., 2019). The existence of repeated and multiple initiatives involving many institutions seems to be the most effective solution to the problem as the more stakeholders are involved, the more overall physical activity is likely to be received from people.

Sport and Nature

Numerous studies have highlighted how a greater connection with the natural environment can lead to multiple psycho-physical benefits for mental processes, cognitive functions, behavior and well-being, as well as having positive and sensitive attitudes for the environment. A deep connection with nature promotes well-being, the adoption of active behaviors such as empathy, stress reduction,

and protection and respect for the surrounding environment. With the aim to synthesize all the benefits people get from ecosystems, the ISPBES (intergovernmental science policy platform on biodiversity and ecosystem services) has 're-named' Ecosystem Services as "the contributions that Nature provides to people" (Costanza et al., 1997, 2017; Díaz et al., 2018). Nature plays a fundamental role in regulating crucial environmental processes that allow the survival of all geo-species including humans, influencing both material and immaterial aspects (Methorst et al., 2021). It goes beyond being just a promotional means for sports and physical activity, constituting its deeper and more intimate dimension. To understand this relationship, one must return to the meaning of the word sport, referring to any "activity aimed at the development of physical and mental skills." Over the centuries, the development of physical and mental skills has taken various forms and methods: from individual sports to team sports, from gyms to home exercises. However, nature represents an added value in sports because it allows the recovery of the "animal" dimension of humans. Having access to open spaces where one can breathe clean and fresh air is important, as it enables optimal breathing and more efficient and rapid oxygenation of blood and tissues, contributing to the development of adequate psychophysical well-being.
In the perspective of reaffirming the natural dimension of humans, the value of exercises with one's body weight, typical of outdoor workouts, should be emphasized. This type of training engages the entire body simultaneously, promoting balanced growth without imbalances or excesses. Such training yields better results in terms of flexibility, coordination, endurance, and reaction and recovery capacity. Moreover, natural settings often present lower levels of air and noise pollution. Therefore, promoting green spaces becomes crucial in providing children and adolescents with an opportunity for psychological well-being and promoting important activities of discovery, creativity, and risk-taking, which in turn influence positively various aspects of brain development. These anatomical differences are associated with beneficial effects on cognitive function.
According to scientific studies, children raised in environments surrounded by a prevalence of green spaces tend to have larger volumes of white and gray matter in certain areas of the brain. Various authors agree that the connection with nature is formed in childhood and can be enhanced through continuous contact with nature and experiences during childhood.

For a proper respect for nature, away from slogans and stereotypes, it is necessary to know all its peculiarities and characteristics and understand the benefits it can offer us. Like a chest full of treasures from an ancient ship sunk at the bottom of the sea, it is crucial to embark on this recovery expedition and draw from all the abundant wealth that nature offers us. Imagine a therapy with no known side effects, easy to follow. In this sense, there is also significant cultural and pedagogical value for the new generations, which should not be underestimated.

Regarding Ecological Intelligence
An interesting study by the American psychologist Goleman (2010) focuses on a particularly important type of intelligence in today's society: ecological

intelligence. Goleman defines ecological intelligence as the ability to understand the consequences of human actions on ecosystems and then apply what has been learned in a functional way. It also aims not to harm nature by adopting a sustainable lifestyle and adapting to the so-called "ecological niche." Due to evolution, this concept has undergone significant growth: expansion. While in ancient times it corresponded to a very limited area around a given society, with the development of trade and transportation, the ecological niche has become coincident with the entire planet Earth. Globalization has had the consequence that interventions, even minimal ones on the environment, have repercussions on the entire global social ecosystem.

Due to the impact that globalization has had on the "ecological niche", it is essential to pay even greater attention to the small actions of everyday life. If the ecological niche has undergone a radical evolution, humans still follow the same cognitive patterns. Ecological intelligence is linked to the area of the brain recently formed and introduced by Goleman with the name "neo-cortex," allowing humans to intentionally learn, identify potential threats, and even identify the subtlest mechanisms connecting our actions to their effects on the environment. Being a highly elaborate type of intelligence, it requires a particularly high level of active engagement, so as to draw lessons from everything one experiences.

On the Application of Ecological Knowledge, Goleman (2010) has provided clear and concise guidelines for implementing the learning of ecological intelligence in an organized way:

1. Know your impacts: Be aware that most of our daily actions have a significant influence on the surrounding environment.
2. Foster improvements: Once you have identified what affects the environment and, if desired, how it does, take action.
3. Share what you have learned: Collaboration among humans is crucial because individualism is not a winning logic in this case.

Nature and the Brain

The human brain shapes itself based on the surrounding environment. Even after just an hour spent among trees, brain stress decreases. Interesting neuroimaging studies have shown that after an hour's walk in the forest, there is a reduction in activity in the amygdala, a small structure in the center of the brain involved in the stress process, emotional learning, and fight or flight response, activated in stressful situations. The fact that its activity decreases after just an hour in nature establishes a new cause-and-effect relationship with the positive psychophysical impact derived from being in a natural environment. Previous studies had already demonstrated that spending even a short period of time in nature is associated with "a range of mental and physical health benefits," including reduced blood pressure, anxiety, and depression, as well as improved mood, concentration, sleep quality, memory, and even faster recovery. Simply observing nature makes people happy and immediately improves overall well-being.

A crucial aspect of the connection between nature and the brain is sensory experience. The sound of birds, the smell of flowers, and the sight of breathtaking landscapes can positively influence mood and reduce stress. Engaging all five senses exponentially increases the positive effects on stress reduction, highlighting the correlation between the presence and listening to nature sounds and lower cortisol (the stress hormone) levels.

Nature and its processes are a model of mindfulness, whose meaning recalls attention and self-awareness. It is a mental state focused on the "here and now." Exposure to nature reduces cortisol levels, improves mood, creativity, and concentration, and can even help reduce symptoms of psychological disorders. Sensory experience and biodiversity, which we as humans must preserve, play a key role in this process. Observing nature is an excellent tool for discovering hidden emotions, increasing concentration, especially in a world where there is little time for self-discovery, meditation, and relaxation.

The fact that outdoor activities lead to better attention capacity also suggests the importance of planning educational activities in schools that involve contact with nature, especially because environmentally respectful behaviors in adulthood have been associated with positive nature experiences in childhood or adolescence (Chawla, 2007).

Pedagogical-Sports Details on Nature Sports

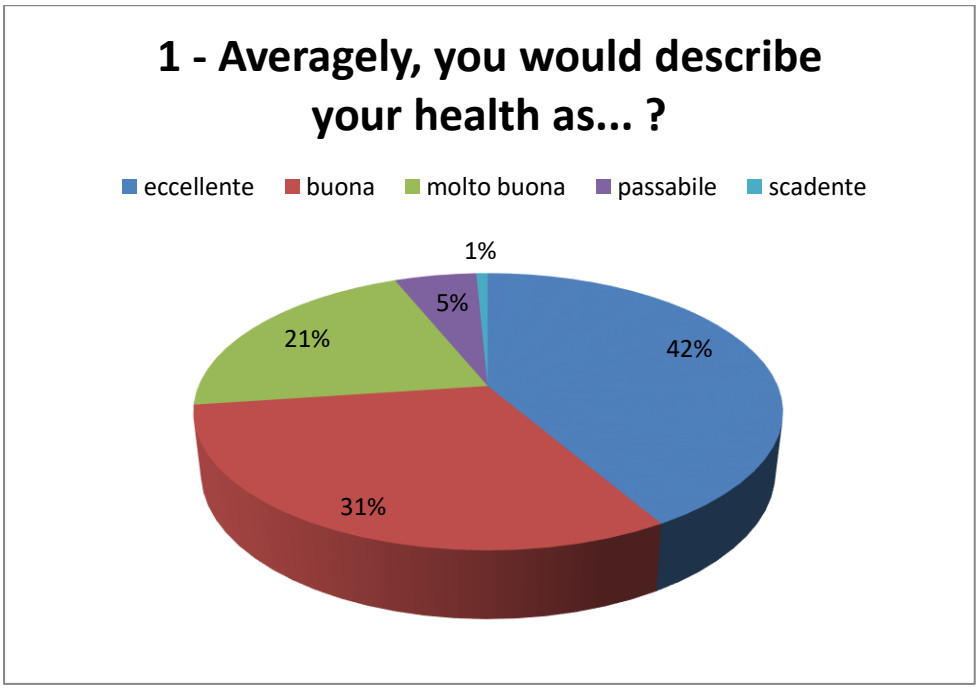
As humans struggle to have perfect body characteristics over the years, the question of managing the health of these individuals arises. Furthermore, nowadays people struggle to maintain regular levels of physical activity over the years, as they may not have time due to work, lifestyle, and constant activities to be carried out during the week. Perhaps the knowledge of maintaining a constant and weekly level of physical activity is not present among people. Since the importance of knowing how to maintain a minimum level of physical activity is not widespread throughout Italy but only in central cities, it is conceivable that different strategies are devised to address this issue. In this regard, during 2023, CISCOD participated in a series of fundamental initiatives with "Sport e Salute" with the aim of addressing the issue in southern Italy. This part of Italy, following the indications of the statistics of the Italian National Institute of Statistics (ISTAT, 2021), has a particular tendency to disperse physical activity, even though there are many naturalistic infrastructures that can be used for amateur and organized physical activity. Perhaps there are also private infrastructures (Google Maps, 2023) that are used, but not by the entire population, as the morphological conformation sees infrastructures concentrated in cities and not in smaller villages, even though there are many forests and beaches that can be used for naturalistic physical activity such as walks or runs or exercises with one's body weight. Although there are many problems, there is still room for interventions.

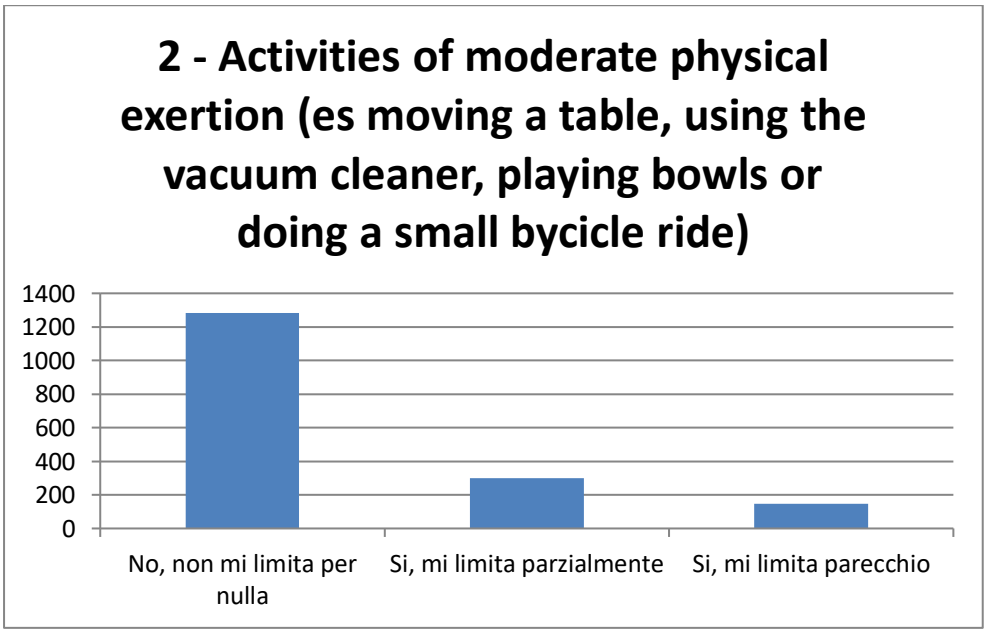
Statistical Introduction

In order to quantify the perceived health among individuals living in the target outskirts of the "Bagno nella Foresta" initiative belonging to the "IFormaMentis" project, an SF-12 questionnaire was used. Following the indications of ISTAT

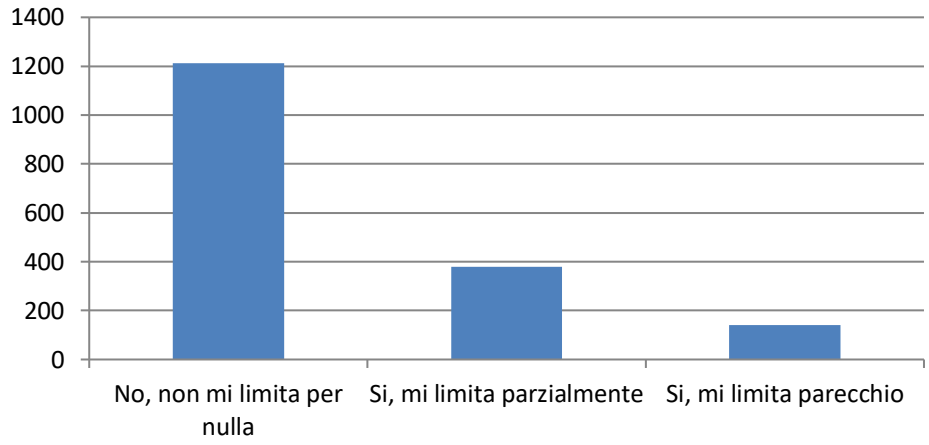
(2020), the SF-12 (Short Form Health Survey) is a questionnaire designed to investigate the perception of psychophysical conditions in individuals. Note: the people who filled out the questionnaire were registered, but their data

Results from the reduced PACES-8 questionnaire, aimed at understanding individuals who considered their overall health poor or fair in the first question of the SF-12 questionnaire, are listed below:

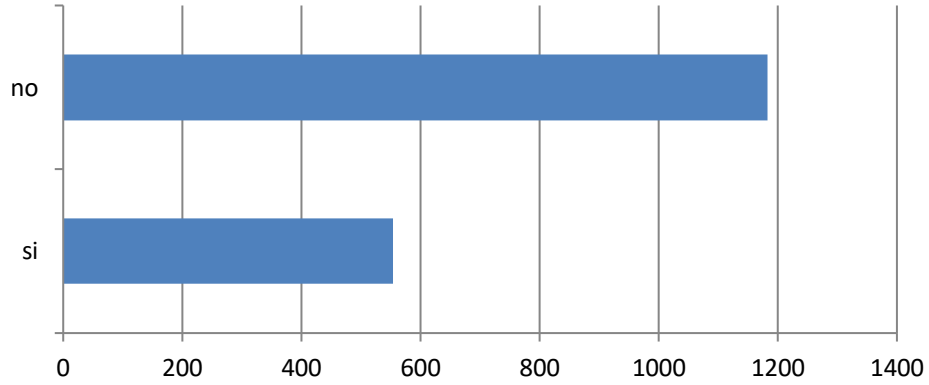


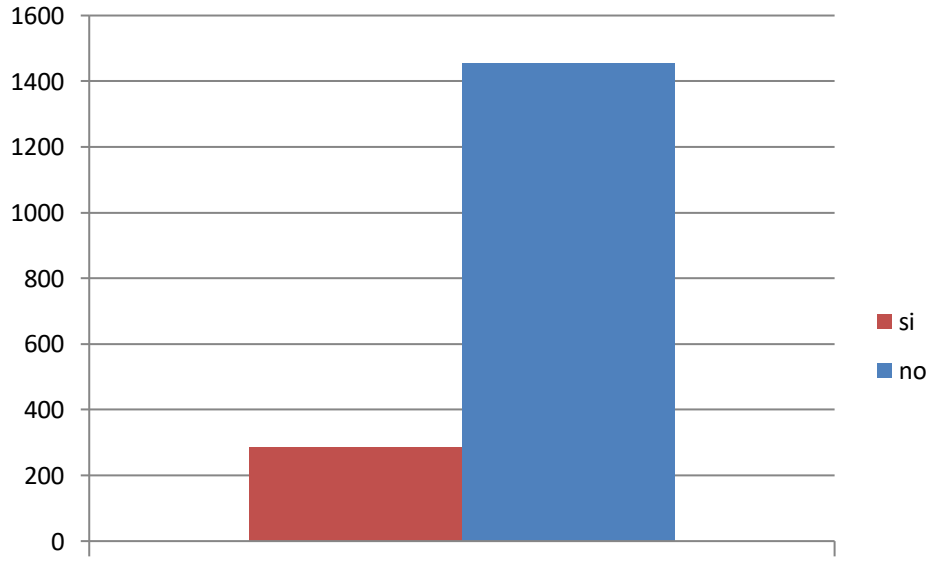


3 - Salire qualche piano di scale



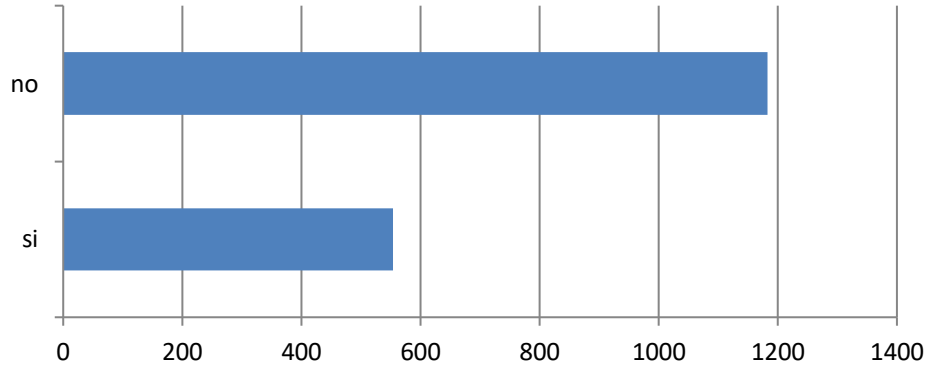
4 - Ha reso meno di quanto avrebbe voluto



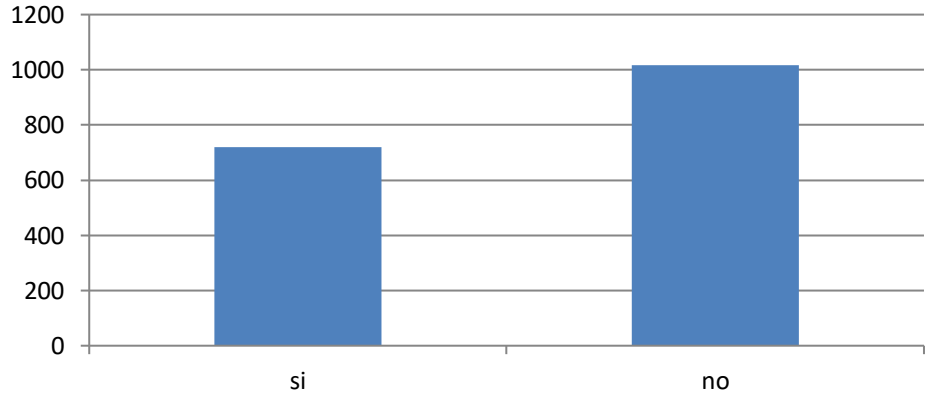


5 - Ha dovuto limitare alcuni tipi di lavoro o di altre attività

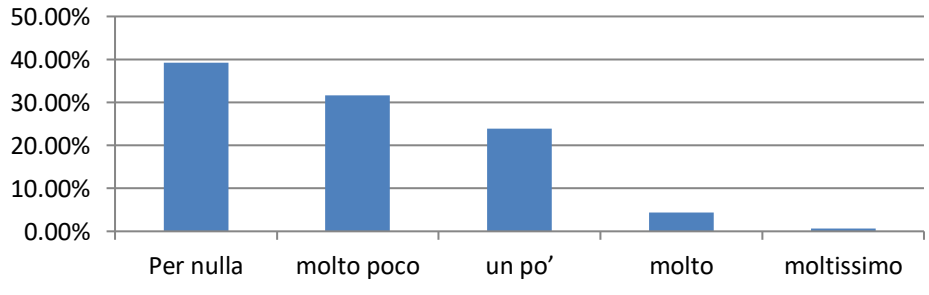
6 - Ha reso meno di quanto avrebbe voluto



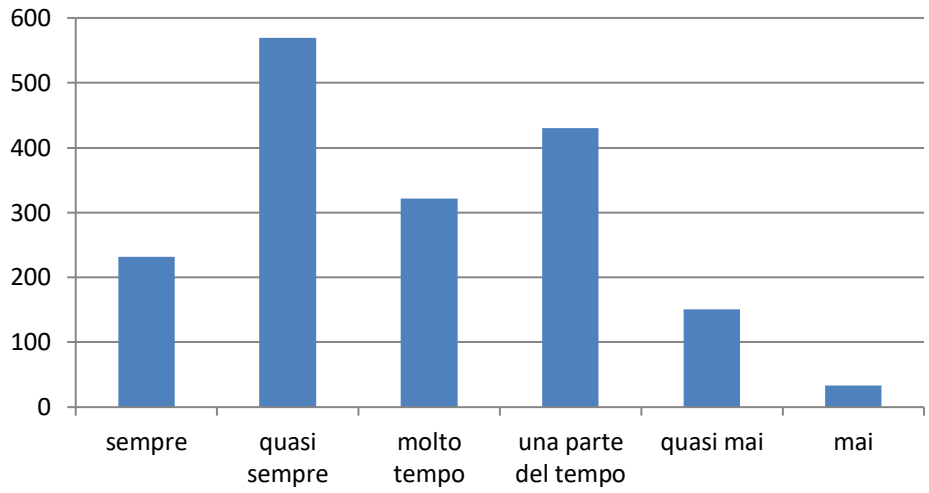
7 - Ha avuto un calo di concentrazione sul lavoro o in altre attività



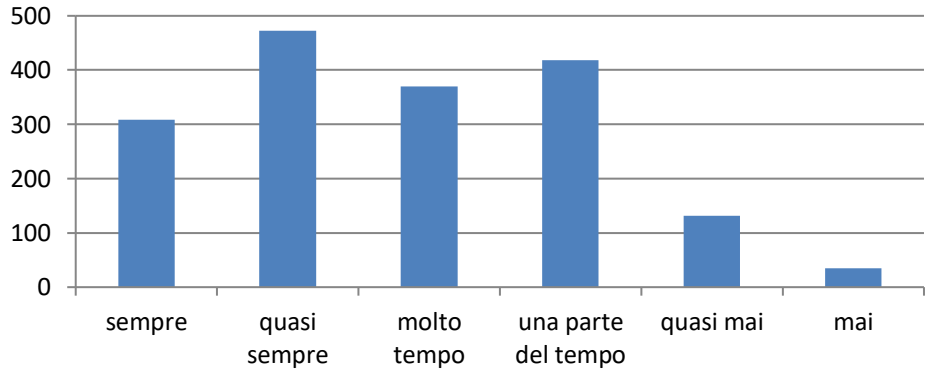
8 - Nelle ultime 4 settimane in che misura il dolore l'ha ostacolata nel lavoro che svolge abitualmente (sia in casa che fuori casa)?



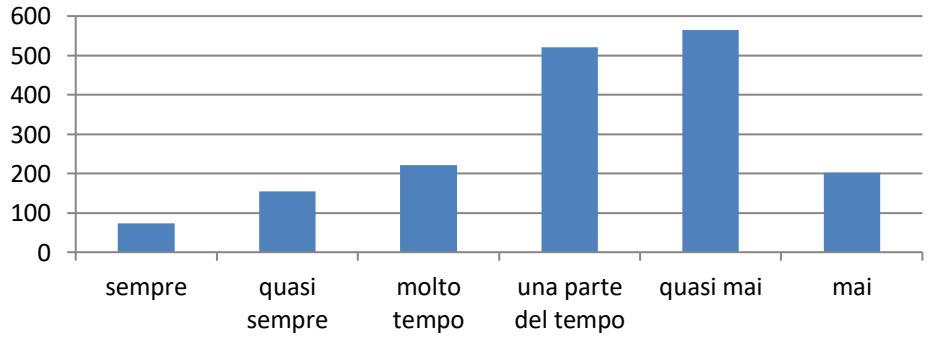
9 - Per quanto tempo nelle ultime 4 settimane si è sentito calmo e sereno

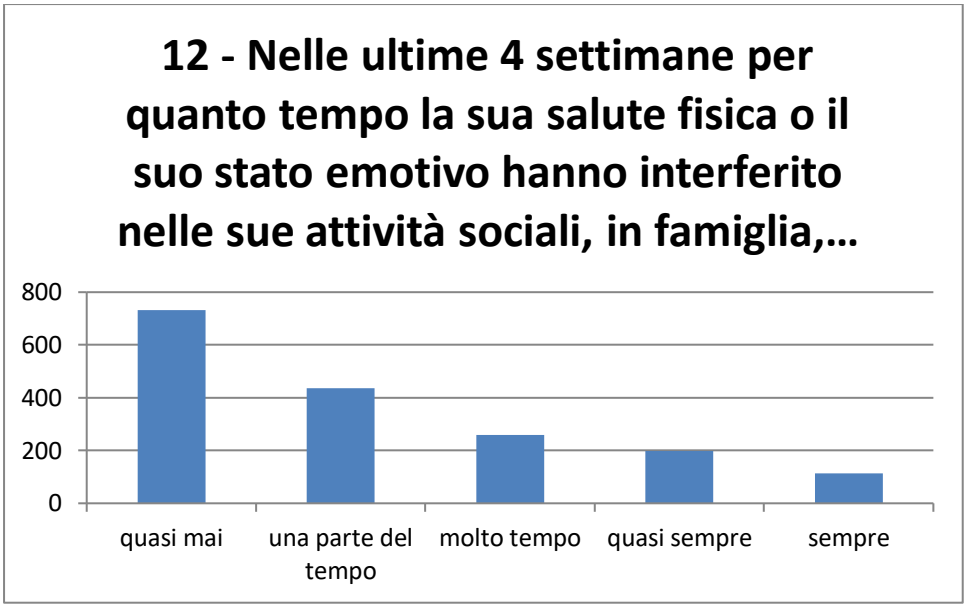


10 - Per quanto tempo nelle ultime 4 settimane si è sentito pieno di energia



11 - Per quanto tempo nelle ultime 4 settimane si è sentito scoraggiato e triste



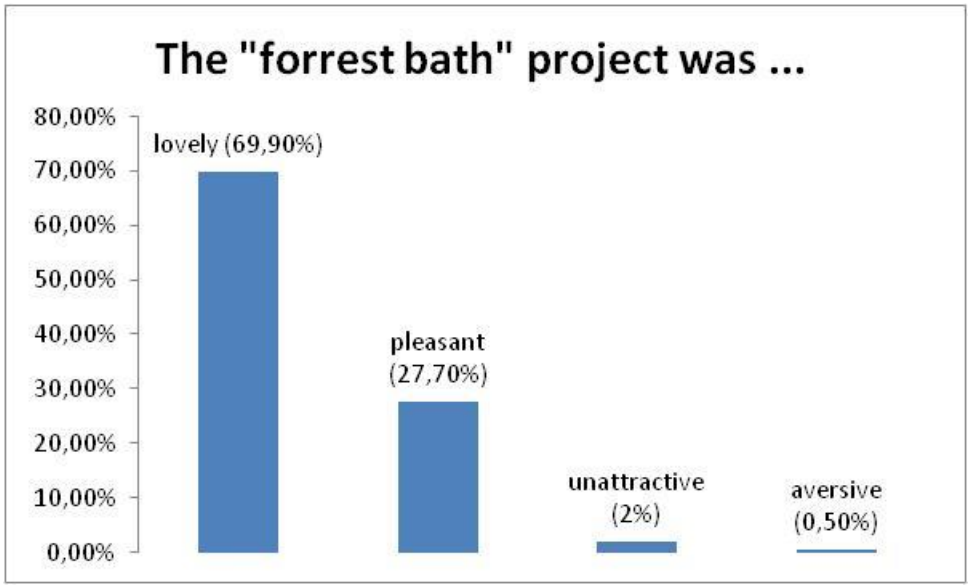


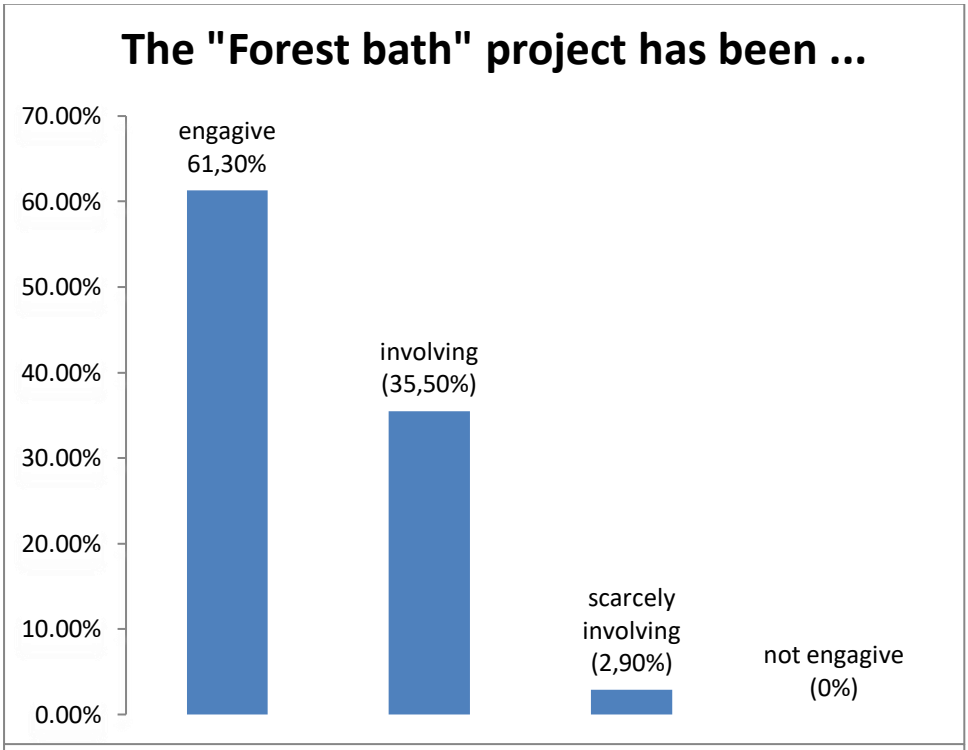
Satisfaction with Physical Activity:
With the goal of delving into individuals who rated their overall health as poor or fair in the first question of the SF-12 questionnaire, the reduced PACES-8 questionnaire was proposed to investigate all individuals to have a clearer idea of the problem and identify suitable strategies to solve it. The PACES-8 (Mullen et al., 2011) is a questionnaire consisting of eight items, asking participants to assess how they feel at the moment regarding the physical activity they are engaged in. Responses are indicated on a 7-point scale and include choices like "I find it enjoyable / I find it unpleasant." Six items were reversed so that higher scores in PACES-8 indicated greater enjoyment. The full scale in this report is used in an abbreviated form as the nature of the responses was intended to be more spontaneous, asking them later in a shortened form.

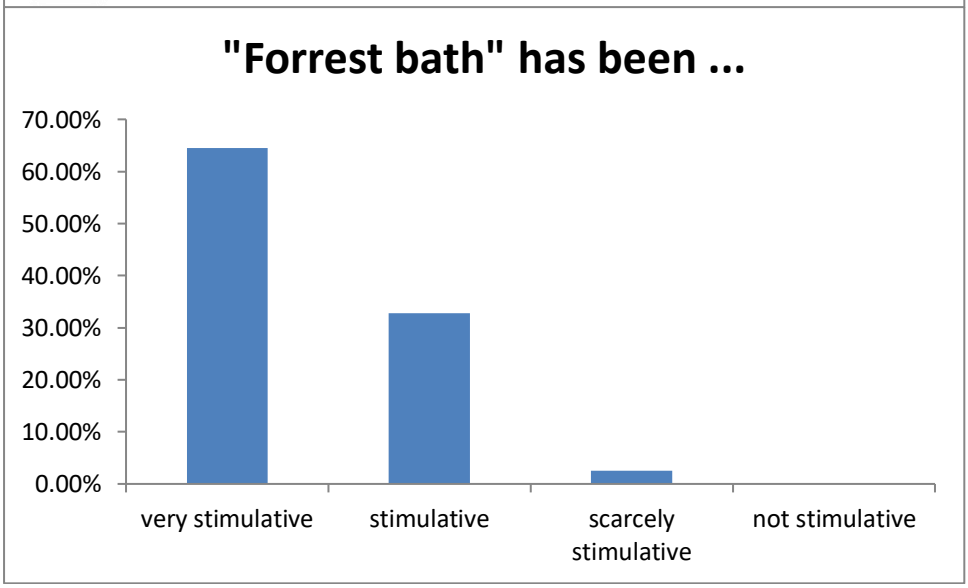
Questions Proposed in the Reduced PACES-8 Questionnaire:

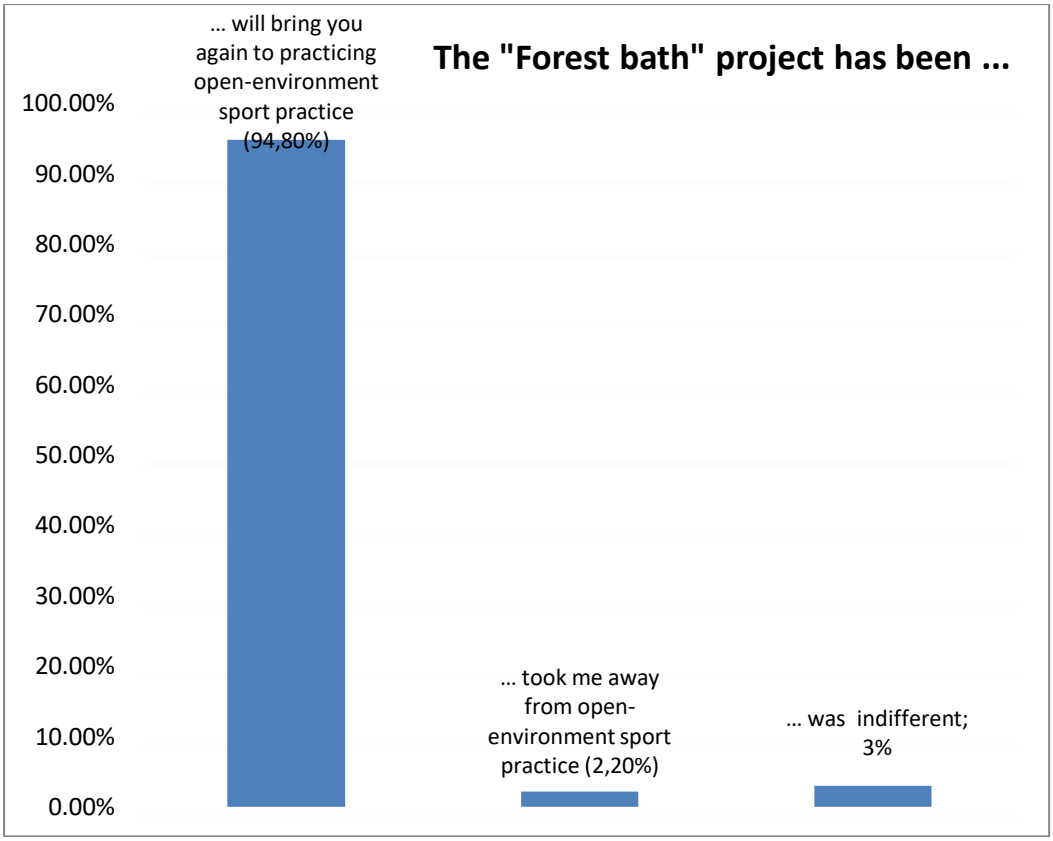
Forest Bathing...
I find it enjoyable / I find it unpleasant
It is very pleasant / It is unpleasant
It is very engaging / It is not engaging
It is not stimulating / It is very stimulating

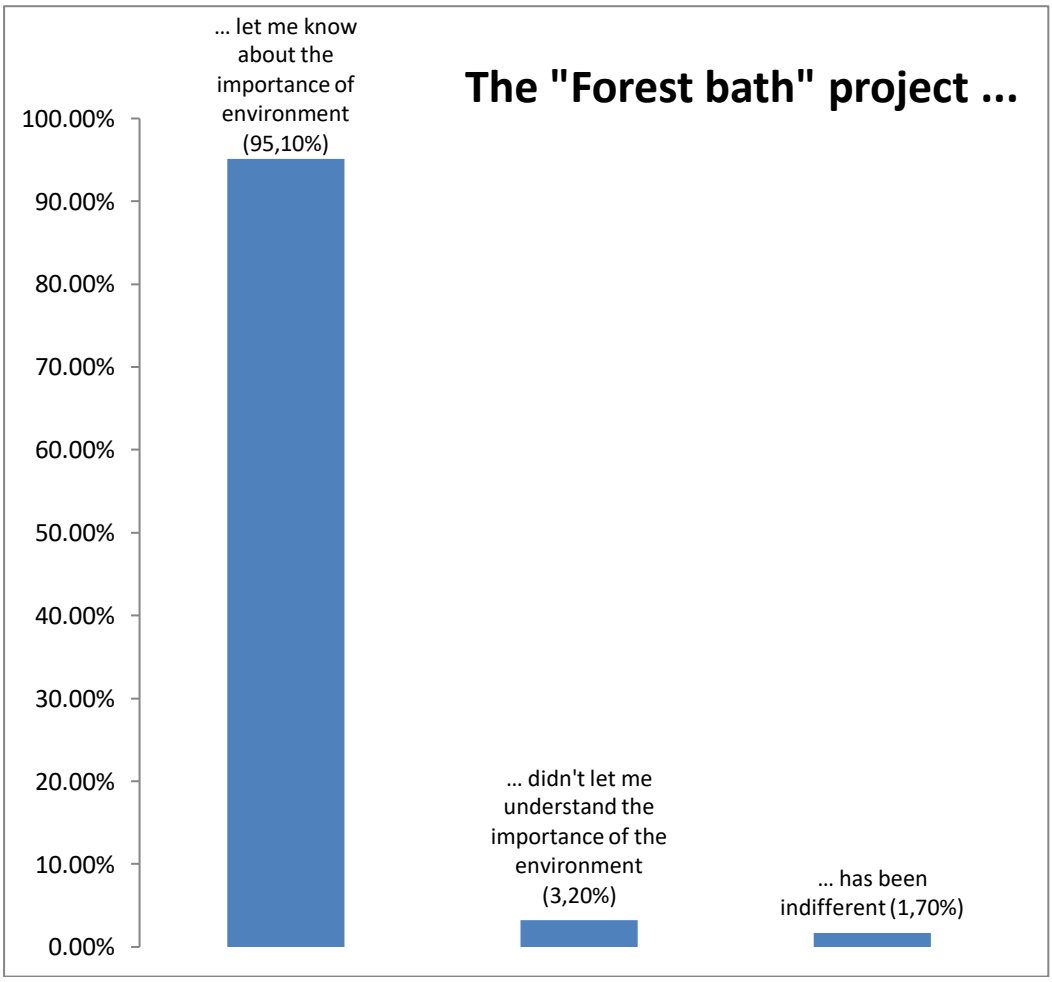
Results:
From the results of the final reduced PACES-8 questionnaire, it was highlighted that 64.7% of the participants belonged to southern regions of Italy (Basilicata, Calabria, Campania, Sicily), while 35.1% belonged to central Italy (Lazio and Tuscany; there was a single person resident in northern Italy but domiciled in central Italy who was excluded from the percentage count). These individuals were then assessed for the role of enjoyment and pleasure in engaging in outdoor motor and sports activities as an element highlighting the importance of the environment surrounding people and as a factor to propose the initiative in the future or integrate it into Ministerial or Governmental policies. Results are listed as following:


The "forrest bath" project was ...
80,00%
70,00%
60,00%
50,00%
40,00%
30,00%
20,00%
10,00%
0,00%
lovely (69,90%)
pleasant (27,70%)
unattractive (2%)
aversive (0,50%)


The "Forest bath" project has been ...
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
engagive 61,30%
involving (35,50%)
scarcely involving (2,90%)
not engagive (0%)


"Forrest bath" has been ...
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
very stimulative
stimulative
scarcely stimulative
not stimulative


The "Forest bath" project has been ...
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
... will bring you again to practicing open-environment sport practice (94,80%)
... took me away from open-environment sport practice (2,20%)
... was indifferent; 3%


The "Forest bath" project ...
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
... let me know about the importance of environment (95,10%)
... didn't let me understand the importance of the environment (3,20%)
... has been indifferent (1,70%)

Discussion:

Given that the average physical activity and sports activity per capita in the peripheral areas of Italy do not reach a level comparable to the optimal level recommended by the WHO, there arises the necessity to increase, in both quantity and quality, the opportunities for physical and sports activities by the relevant authorities. To enhance both the quantity and quality of physical and sports activities in peripheral areas, the following strategies were initially considered as "feasible" in the short term:

1. School and University Programs:
   - Implementation of sports programs and physical activities in schools.
   - Involvement of teachers, parents, and students in the design and promotion of these initiatives.

2. Awareness Programs:
   - Conduct awareness campaigns to inform the population about the benefits of physical activity and its positive impacts on health.
   - Involvement of public figures and well-known athletes to increase interest and participation.

3. Training and Education Programs:
   - Educated citizens ensure preparedness and inspiration for participation in physical/sports activities, even in peripheral communities.

4. Use of Technologies and Online Platforms:
   - Exploitation of technologies and online platforms to offer distance physical activity programs, allowing people to participate or be involved from home.

5. Active Community Participation:
   - Actively involve communities in the design and implementation of sports programs, ensuring a feasible response to local needs.

These strategies, implemented in a coordinated manner and adapted to the diversity of peripheral communities in Italy, can contribute to stimulating physical and sports activity. Additionally, considerations were made for:

- Developing sports infrastructure (acknowledging that the use of existing infrastructure and parks by associations or institutional delegates had both faster implementation and better applicability).
- Involving sports associations and clubs (recognizing that not all had enough personnel to immediately participate in the project).
- Hosting sports events (acknowledging that the organizational phase required time and human capital).
- Establishing virtual communities (recognizing that a virtual community needed to support the project and must be widespread in all peripheral areas of Italy before people could join).
- Evaluating and monitoring over time (acknowledging that these require specialized human capital with experience in similar projects implemented in

other nations, which was not currently available for the "IFormaMentis" project).

- The physical or sports activity should not be intense (considering perceived effort intensity as a dropout risk factor, it was chosen to propose low-impact cardiovascular activities such as Yoga and Trekking).

Following these organizational intervention phases, a pilot program was conducted: a 30-hour online training course (delivered through the platform [link](https://www.ciscodcorsi.org/)) aimed at promoting physical activity in

peripheral areas of Italy. It was realized that making projects like "IFormamentis" systematic over the years would lead to a numerical increase in physical activity in peripheral areas and total physical activity (excluding the health benefits). Producing more physical activity in peripheral areas of Italy was the core idea focused on by the project.

Combining the collected data provided a comprehensive and detailed view of the project's initial objective. The collection of qualitative and quantitative data, along with active collaboration with local communities, was crucial for effectively developing the proposed project solution. Further operational guidelines for the future can draw inspiration from the results of this report and be proposed in collaboration with integrated guidelines involving other European Institutions concerned with the health of peripheral areas. Organizing and coordinating lead to more data and, consequently, more effective interventions.

To support the health benefits of physical activities carried out in the project, the following starting points were considered:
- Taking into account that from a health benefits perspective, a study (Gordon LA et al. 2008) demonstrated that the benefits of Yoga on fasting blood glucose, lipid profile, oxidative stress markers, and antioxidant status were equivalent to those from more conventional exercise programs; this made Yoga's low-impact, health-beneficial, easily reproducible activity suitable for subjects in peripheral communities of Italy.
- As reported by Denise Mitten et al. 2018, trekking is an economically advantageous intervention encouraging people to be physically active by spending time in nature. Time spent in nature can bring health benefits through contact with natural elements, participating in physical activity, restoring mental and emotional health, and spending time with social contacts. Benefits can be immediate (e.g., reduced blood pressure, decreased stress levels, enhanced immune system function, and attention restoration) or may manifest over time (e.g., weight loss, decreased depression, and overall well-being).

Subsequently, local institutions were engaged in project implementation to involve as many individuals as possible, leveraging the communication channels and better understanding of potential participants available to institutions. Finally, physical and sports activities were conducted in natural environments, guided by the principle of putting into practice what had been learned. In a concluding phase, a participation certificate was issued.

Conclusions:

The benefits of a single session of physical activity are short-lived (e.g., a few minutes for cognitive improvements, a few hours for anxiety reductions), and chronic adaptations to repeated exercise (e.g., improvement in cardiovascular and muscular functions) are lost within a few weeks of inactivity. Due to the brief persistence of benefits over time, transforming a single project from temporary to periodic in Italian regions (or other peripheral regions where low physical activity is recorded and even a lack of awareness about the importance of physical activity) seems evident. More studies and integration of projects like the one carried out by CISCOD should be discussed and proposed. Additionally, the number of such projects should be increased because improving health through physical activity is vital, leading to a decrease in hospital visits and subsequently reduced healthcare costs. The periodic promotion of different projects is also an alternative method capable of increasing the number of hours of physical activity produced by the overall population. Collaboration with other European institutions is suggested.

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