

Erasmus+ Sport Collaborative Partnership

Let's #BEACTIVE

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Let's Be Active Research: data collection and analysis of Physical activity levels of trial participants

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1. Summary

The following pages assess and report on the findings of the Let's#BEACTIVE (LBA) trial implementation from a research and evaluation standpoint. Briefly, the trials consisted of a structured 6-week induction programme aimed to increase levels of physical activity and to improve different metrics of quality of life issues. The trials were held at fitness centres across 8 different European countries, with retention (adherence to maintain activity levels) at 3 and 6 months after the trials had ended. The project successfully engaged large groups of physically inactive individuals (45%), where a majority were women (66%) and from a middle age (average of 40 years old). The trials reported good adherence and also in increases in the percentage of participants showing a better capacity to maintain an improved family role, to have better sleep and/or mental health outcomes, and to reduce previous pain or discomfort in their daily lives. These increases in the quality of life indicators support the role of fitness centres in front-line public health promotion. Significantly, the LBA trials showed better retention rates in comparison with previous experiences at the end of the 6-week (71.8%) and after 3 (37.1%) and 6 months (28.2%).

2. Background

Using comparative tools and models of other health-enhancement physical activity (HEPA) initiatives, we aim to determine the Let's#BEACTIVE (LBA) project's efficiency and impact. Thus, the two pillars of the LBA project were:

(a) the collaboration of a significant number of fitness centres across Europe to build a sustainable intervention for physically inactive individuals, and,

(b) follow such participants during a 6-week induction programme, analysing the intervention effects on physical activity levels and proxies of quality of life. Both pillars are condensed in WP 5.1 (Update of the Let's#BEACTIVE training programme and set-up application to track the participants) and WP 5.2 (Evaluation of the Let's#BEACTIVE programme).

Based on the successful delivery of the PAHA 6-week trials (1), a similar approach was used to deliver the LBA training programmes to the participants, but trying to keep it as simple and as attractive as possible, allowing fitness centres to manage the induction programme based on their capabilities, staffing and in-house resources.

The LBA project aimed to test and trial the value and impact of the intervention in a mix of different settings and countries to show how an induction exercise programme can positively modify the activity levels of currently inactive adults and helping to improve their quality of life. The overarching measure was to help participants to achieve the global recommendations of physical activity by the World Health Organization (2) and for them to maintain an active lifestyle over time.

The project aims were aligned with the Global Action Plans (3)(4) and Physical Activity Strategy for the WHO European Region (5), helping ultimately to contribute to the Sustainable Development Goals of the United Nations (6).

3. Total participation and data collected

From those Europeans that participated in the interventions, we there was complete data from a total of 3,938 participants. By country, registered participation were: in Italy,

n = 1602 (41%); in Portugal, n = 752 (19%); in Ireland, n = 507 (13%); in Finland, n = 400 (10%), in Spain, n = 351 (9%), in Lithuania, n = 285 (7%), and in Czech Republic, n = 41 (1%). The model used was designed to attract inactive individuals using current standard local communication strategies and resources and involving the social networks of existing active members of fitness clubs. The model, although generally valid in several places and contexts and despite intensive effort to achieve the desired number of participants did not achieve the original number of participants. In year three the numbers were severely restricted because of the extensive lockdowns and closures of fitness facilities – where at its peak 95% of all clubs were closed across Europe due to the COVID-19 pandemic. Whilst the project was still able to fulfil the aims for which it was designed, it seems that more targeted strategies could be applied when large local physical inactive communities are involved. Although a number of clubs tried to re-start trials the COVID-19 pandemic with its short-notice lockdowns in the partner countries severely disrupted all normal workings.

Regarding physical activity levels, the project had the objective to enlist physically inactive individuals. Physical inactivity is related with an less than optimal health status linked with a plethora of non-communicable diseases and burdening (2). Particularly, in the World Health Organization (WHO) European region, physical inactivity is the attributable risk factor for 12% of the type 2 diabetes, 8% of the colon cancers, and 9.7% of all-cause mortality annually. This burden represents a direct and indirect annual health-care costs of \$11.743 and \$3.829 million, respectively, for the European region (7).

In the interventions, almost half of the participants ($n = 1,772$, 45%) showed insufficient physical activity levels while starting the 6-week intervention. Usually, physical activity interventions are able only to recruit already physically active individuals, being physically inactive around 20-30% of the total participants (8). Particularly, fitness centres are only able to catch them from one recreational facility to the next one but not registering new inactive members (9). In comparison, the rest of the fitness facility members do not attend the facility regularly, being physically inactive in the long run as a consequence. Our numbers indicate our project's relevance, and findings support a strong position on how to engage with inactive individuals and to change their lives for the better.

A majority of the participants were women, $n = 2,599$ (66%), showing an important capacity for recruiting this gender. In this sense, it is known that women are usually less active than men counterparts (10,11). Generally, fitness centres show a slightly higher amount of women members than men (56-59%) (12,13), indicating a higher capacity to incorporate adult women in comparison to other industries such as organized sports (14). In particular, we were able to bring in and attend to that particular gender in a bigger extent, with a greater contribution to the fifth goal of the sustainable development goals than the average fitness sector (6).

Lastly, considering the age of participants, the LBA trail participants showed a mean and standard deviation of 40 ± 9 years old. The study aimed to recruit adults from 18 to 55 years old. It was an outcome to record that the campaign worked perfectly for those more close to the upper limit age, in which non-communicable diseases started to be developed to a greater extent and comorbidities start to emerge (15).

4. Completion of the trials

Traditionally, fitness centres show low levels of both short- and long-term participants retention. Scientific literature shows low levels as 59% after six weeks (16), 37% of retention after three months (12), with just 10% of the clients still going to the fitness centre after six months (17). In our mission as an ally in the public health agenda, and as the representatives of a mature European-level fitness sector, the project aimed to exceed these 'traditional' levels of retention, proposing to having 75% of the participants completing the six-week initial trial, with 55% still exercising after 3 months after trial completion and 25% is expected to still be exercising and physically active at levels which are beneficial to their health 6 months after the completion of the six-week structured intervention.

As can be observed in Table 1, the LBA results show a high capacity of client retention at the European level when compared with previous experiences, showing comparable or higher levels than the literature (12,16,17). Nevertheless, lower levels than those aimed in the project proposal were realised after the three-month point, but actually slightly higher after 6 months. This was realistically to be expected as we indicated challenging completion levels of the trials that would challenge both as a sector and project and COVID-19 restrictions and lockdowns affected our ability to complete the interventions.

When compared to outcomes in the traditional settings the results are very encouraging and supportive of the model used.

Table 1: Summary of the participants completing the interventions after 6 weeks, 3 months, and 6 months from induction.

	Participants starting the interventions	Completion 6 weeks induction	Completion 3 months from induction	Completion 6 months from induction
Number of participants	3,938	2,827	1,760	1,111
Percentages (%)		71.8%	37.1%	28.2%
Project expected %		75%	55%	25%

5. Improvements in physical activity participation and reduction of sedentarism

As mentioned above, almost half of the participants (n = 1,772, 45%) showed insufficient physical activity levels while starting the 6-week intervention in the project. Theoretically, the intervention models, particularly designed for inactive people following scientific recommendations for individualized exercise prescription by the American College of Sport Medicine would work perfectly while bringing new members to the fitness centres (18,19). The training programmes included aerobic exercise, resistance training, and stretching/mobility exercise with a frequency of 3 exercise sessions per week, in which individual counselling by Personal Trainers along with behavioural change techniques would increase the participation and consequently, the physical activity levels, both inside and outside the facilities. At fitness centres, members usually have around two and a half times the chances to be physically active versus the general population (20), being around 80% active and showing healthier lifestyle decisions while analysing their behaviour versus people from outside the fitness facilities (21). In this regard, it seems that fitness centres are particularly effective for promoting healthier, more active lifestyles. As a consequence of such ability by the sector and the design of effective interventions, and what can be observed in Table 2, the number of physically inactive individuals was largely reduced. Our numbers corroborate how the

fitness sector is effective in helping inactive individuals to progress to a healthier, more active lifestyle and their potential role in the public health agenda.

Table 2: Summary of the participants progression from being physically inactive to physically active after the 6-week intervention period.

	Participants starting the interventions	Numbers of physically inactive participants while starting	Numbers of physically inactive participants while finishing the 6-week intervention	Numbers of new physically active members after finishing the 6-week intervention
Number of participants	3,938	1,772	748	1,022
Percentages (%)		45%	19%	30%

Additionally, a reduction in sedentary behaviour was observed across the interventions. Sedentary behaviour is defined as any waking behaviour performed in a sitting, reclining, or lying posture. Sedentary behaviour presents a major risk factor in the development of many chronic diseases such as obesity, type 2 diabetes, hypertension, cancers, and even premature death (22), being this risk sometimes independent of the physical activity performed (23). As a consequence of this, reductions in sedentary behaviour should be a part of an intervention programme tailoring inactive individuals, as the chances of being sedentary while being inactive are high. In our interventions, the time spent with sedentary behaviour was also reduced, progressing from 136 ± 192 to 122 ± 166 daily minutes.

6. Improvements in quality of life indicators

Along with the physical activity levels, four scientific validated questions regarding the quality of life of the participants before and after the 6-week intervention were included. These questions analysed the extent of the affectation in daily live activities by the participants regarding the role performed in the family (i.e., unaffected, some or may part that that person can't be carried out, or the inability to carried out), the ability of sleep (i.e., without difficulty, interrupted some of the time, interrupted most nights, and in short bursts), how the participant feel about the extent of anxiety, being worried or depressed (i.e., no feel at all, or slightly, moderate or extremely feel of anxiety, worry or depression), and if the participant feel pain or discomfort while undertaking daily activities (i.e., not at all, moderate pain, or severe pain).

Before the 6-week intervention, 33% of the participants had some problems regarding their family's role, 76% had some problems sleeping, 65% felt some extent of anxiety, worry, or depression, and 53% felt pain or discomfort while undertaking daily activities. As can be observed from the baseline data, the participants before the interventions showed suboptimal indicators of quality of life, with important values of dependence, problems with sleep, and mental problems or pain of some sort. It is known that increase in physical activity levels has an effect in quality of life proxies, helping to become people less dependent, sleep better, and reducing mental health an pain issues (24). Thus, any intervention programme should consider these plausible increases in quality of life indicators as a part of any health-focused intervention (19). Consequently, our interventions were also designed with this in mind. Table 3 resumes the increases in quality of life indicators after the 6-week period as showed by reductions in the percentage of participants suffering from loss in the role capacity as a

family member (-6 percentual points) and from sleeping (-7 percentual points), mental health (-12 percentual points) or pain problems (-11 percentual points).

Table 3: Summary of the quality of life indicators before and after the 6-week intervention period regarding family's role, sleeping, mental issues, and pains and discomfort.

	Percentage of individuals showing a particular issue before the intervention	Percentage of individuals showing a particular issue after the 6-week period
Family role ¹¹	33%	27%
Sleep ²	76%	69%
Mental health ³	65%	53%
Pain or discomfort ⁴	53%	42%

7. Quality control sample

Besides the general interventions, we included a quality control performing a more controlled and tailored intervention, always being supervised by Personal Trainers, in a fitness centre facility at King Juan Carlos University. For that, inactive lecturers, staff, and students were asked to enrol freely in a programme after their schedule with the same characteristics as regular interventions, but with additional testing to ensure that the interventions improved several health parameters. From an initial number of 60 participants, a total 36 ended the 6-week period satisfactorily, showing a 60% retention at the end of that period. In this group, we collected parameters related to body composition (percentage of fat mass, total mass of visceral fat, lean mass), cardiovascular health (oxygen consumption, blood pressure and heart rate), a more broad quality of life survey considering different dimensions of life (SF-36v2),

¹ How does your health affect your relationship with your family?

² How would you describe your sleep?

³ How do you generally feel?

⁴ Do you feel any pain or discomfort while undertaking daily activities?

and one exercise for testing upper (bench press) and lower limbs (parallel squat) strengths. As can be observed in Table 4, all health markers increased after the 6-week period, showing a proper intervention for optimizing broad indicators of health such as body composition, cardiovascular health, quality of life, and strength.

Table 4: Summary of the quality control intervention showing several health markers before and after the 6-week intervention.

	Data before the intervention	Data after the intervention
Fat mass (kg)	21.4%	19.8%
Visceral fat (kg)	6.6	5.9
Lean mass (kg)	57	58
Oxygen consumption (ml/kg/min)	35.1	37.9
Systolic blood pressure (mmHg)	127	121
Diastolic blood pressure (mmHg)	79	75
Heart rate (bpm)	66	63
Quality of life (random units)	82.6	85
Strength upper limbs, bench press (kg/kg)	0.56	1.26
Strength lower limbs, parallel squat (kg/kg)	0.58	0.68

As was indicated above, there is a lack of reports of controlled interventions at fitness centres showing improvements in the populations involved (25), except anecdotal reports, e.g., (26), but all the cross-sectional data show that people engaged in fitness facilities are more active and healthier than non-members counterparts (20,21).

We presume that general improvements observed with the quality control group happened in the rest of interventions to a greater or lesser extent considering the particular characteristics of the participants involved, the fitness centre, and its ability to tailor the intervention programmed. Along with the previous experience of PAHA (1), more focused on promoting healthy and active ageing, the LBA experience shows how interventions for adults in fitness centres are effective for increasing the

physical activity levels while preventing non-communicable diseases related with body composition and cardiovascular status and strength and increasing several markers of quality of life.

7. Recommendations for improving large scale interventions

Learning from the experiences of the different LBA interventions, provides considerations on how to improve future interventions in approaching large groups of physically inactive Europeans:

- The project was able to engage large groups of individuals but failed in reaching the full originally expected numbers as previously outlined participants. It is reasonable to conclude that different strategies are needed other than the model of using social networks of existing active members of fitness clubs if targeting large local physical inactive communities.
- Despite large improvements in recruiting physically inactive individuals for the trials (45%), the majority of recruited ones still keep being already active. Whilst the marketing approach used in LBA worked, a clearer claim for the inactive people to be attracted still needs to be considered.
- The key metrics of the drop-out percentages were still reported after the cut points of 6 weeks and 3 and 6 months, despite improvements in comparison with the average provision of services by fitness centres. It

seems relevant to connect with new potential means by other means (i.e., conduction, services offered, on-line support).

- Despite most of the participants finishing the 6-week trials evolved to an active lifestyle, around 20% of them could not perform the recommended physical activity by the WHO recommendations at the finish of the intervention. It seems reasonable that more broad entry-level sessions and interventions may be needed for those not surviving to an intervention particularly tailored for them as they do not have the minimum fitness to enjoy or perform the interventions.
- The improvements in quality of life indicators support the role of fitness centres in public health promotion. Nevertheless, interventions as LBA project still rely on a lot on self-reported data. As our quality control indicated clear improvements in different health parameters, indicating the suitability of the interventions, it seems a logical next step to scale the collection of more quality data in large-group interventions considering measured physiological data.

8. References

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