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EUNAAPA – Work Package 5

Expert Survey on Physical Activity Programmes and Physical Activity Promotion Strategies for Older People

National Report
PORTUGAL

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EUNAAPA
EUROPEAN NETWORK FOR ACTION ON AGEING AND PHYSICAL ACTIVITY

Contents

Introduction

The European Network for Action on Ageing and Physical Activity (EUNAAPA) is committed to improving the health, wellbeing and independence of older people throughout Europe by the promotion of evidence-based physical activity.

The first aim of EUNAAPA work package No. 5 (Identify Existing Programmes for Physical Activity and Physical Activity Promotion for Older People) was to identify and describe, with the help of national experts, Portuguese examples of physical activity (PA) programmes and PA promotion strategies for older people which were deemed to be 'successful'. The second aim was critically to compare these programmes and strategies with evidence based guidelines identified by a systematic search of the scientific literature.

In May 2007, the EUNAAPA Partners in each participating country were asked to enlist the help of eleven physical activity Experts in their country, all recognised authorities on PA for older people. Each Expert was asked to:

- complete a short questionnaire concerned principally with the availability in their country of national qualifications in the supervision or guidance of physical activity for adults in general and for older adults in particular.
- identify a successful PA programme for older people in their country and assist its director to complete a second (longer) questionnaire, concerned primarily with the characteristics of the chosen PA programme.
- identify a successful PA promotion strategy for older people in their country and assist its director to complete a third questionnaire, concerned primarily with the characteristics of the PA promotion strategy.

The resulting data have been submitted to the leader of work package 5 (University of Edinburgh) for incorporation into a cross-national report. The present document is a national report on the data collected by and from the Portuguese Experts.

The Experts

Methods

Selection of Experts

As requested by the leader of Work Package 5, eleven Experts were selected with the help of the matrix below (Table 1). Partners were instructed that they should use the matrix to guide the selection of eleven Experts – ideally one from each of the 11 boxes but not more than two from any one box. They were advised that the matrix should be used flexibly, bearing in mind that, for example, that several organisations could be located in more than one box. EUNAAPA Partners were also advised that, ideally, all of their selected Experts should be knowledgeable both in the field of PA Programmes and in the field of PA Promotion Strategies. If this was not possible, it was particularly important that the Partners should ensure that both fields were adequately represented in the group of 11 Experts as a whole.

All of the selected Portuguese Experts were known personally to the Portuguese Collaborating Partner. Selected Experts were contacted by the Collaborating Partner by telephone. Where necessary, e-mail or an answering service was used to arrange a mutually convenient appointment for the telephone conversation. The purpose of the project was explained to the potential Expert by the Collaborating Partner and their support was requested.

It was unfeasible select experts in the sport sector (national or Regional level) because in Portugal it not exist a Ministry of Sport or an equivalent and also there's no NGO specialising in the delivery of recreational or competitive physical activity for older people. Consequently, we selected 11 experts as potential respondents, covering 9 of the 11 fields standardized for WP5 (Table 1).

Distribution and return of Experts' questionnaires

On 8 June 2007, each of the 12 Portuguese Experts who had agreed to participate was sent an electronic copy of the PA Expert Questionnaire, accompanied by an explanatory letter. Also included were a template of a further explanatory letter and electronic copies of the other two questionnaires for distribution, in due course, to the directors of their chosen PA programme and PA promotion strategy.

PA experts were encouraged to complete and return the PA Expert questionnaires as soon as possible before 10 August. Defaulters were reminded in mid-July (e-mail), mid August (e-mail), and early September (e-mail). The last reminder included a warning that if questionnaires were not returned by 20 September, it might not be possible for their data to be included in the final analysis and in the national and cross-national reports.

Table 1 - *Matrix used to guide the selection of national Experts for WP5*

	sport sector		health sector and/or social services sector		education sector (including training and professional development)	
	government	other	government	other	government	other
National or Regional	Ministry of Sport (or equivalent) 1	NGO specialising in the delivery of recreational or competitive physical activity for older people 2	Ministry of Health *or* Ministry (or department) with particular responsibility for older people 3	NGO specialising in the delivery of health-related exercise for older people *or* sickness funds or health insurance *or* NGO addressing age-related issues 4	Department specialising in the training of those who deliver recreational, competitive or health-related physical activity for older people 5	NGO specialising in the training of those who deliver recreational, competitive or health-related physical activity for older people 6 Professional association for those specialising in old age healthcare or social care 7
	government	other	government	other		
City or local neighbourhood	Municipal department for sport, recreation and leisure services 8	Sport or dance organisation with special interest in older people *or* Other organisation providing physical activity opportunities for older people 9	Municipal department responsible for healthcare services for older people *or* Municipal department responsible for social care services for older people 10	Local branch of a sickness fund or health insurance *or* Commercial provider of health-related exercise *or* Local branch of an NGO addressing age-related issues/providing social care for older people 11		

Field without expert

Results

Selection of Experts

All the eleven selected Experts agreed to participate.

As we had presented in methods chapter, when selecting the Experts, the Collaborating Partner judged that the eleven represented all of the primary matrix fields, with the exception of box 1 and 2 (Table 1) and with 2 Experts representing box 4 and 9 (Table 1).

Several Portuguese Experts, however, could justifiably be identified with more than one field in the selection matrix. In fact, the four experts representing the fields 4 and 9 have also characteristics that simultaneously match the educational sector.

Return of Experts' questionnaires

By 18 July 2007, three of the eleven PA Expert questionnaires had been returned. By 10 August, two more PA Experts had returned their questionnaires, and by 31 August, despite several reminders (see above), the 6 defaulters had still to return their Experts' questionnaires. Following the WP5 Leader decision to set a new deadline (20 September 2007) we informed all the defaulters that they had to send back the questionnaires till 14 September, and by this time we received three of the 6 lacking questionnaires. At last, by 21 September the last 3 PA Experts questionnaires had been returned. Unfortunately, all the 3 PA Experts had identified PA programmes and promotion strategies already nominated, and according the agreed protocol those duplications were deleted.

Experts' educational background

Table 3 shows the educational background of national experts. It is clear that experts selected have a common educational background, although having different job titles, and areas of expertise. Both experts categorized with other educational background are in one case (expert J) associated to marketing (and also exercise/sport science) and the other one (expert K) to social care.

Table 3 - *Educational backgrounds of national Experts for WP5 (XQ9).*

	Expert											
	A	B	C	D	E	F	G	H	I	J	K	Total
Medicine												0
Other Health Profession												0
Exercise/ Sport Science	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑		**10**
Other										☑	☑	**1**

Field without expert

Experts' area of practice

Table 4 gives a combined overview over the national Experts' areas of practice. The rating shows that all the areas are well-represented, but not uniformly, for the reason that some sections are cover by a range of experts and other section have only one mark, as the following professional expertise areas: Health care, Health promotion, Social services, social care or social welfare and Socio–cultural organisation. Also, with respect to the professional expertise areas, it must be noted that none of the respondents answer as an expert from the Health–related exercise facility management area and Health–related exercise instruction/ supervision/guidance area. The self rating shows, however, that the majority of respondents claim to be experts for more than one professional area. It is also important to note that only two experts consider themselves to be knowledgeable in physical activity (promotion) strategies field.

Table 4 - *The national Experts' areas of practice (XQ10).*

		Expert										
		A	B	C	D	E	F	G	H	I	J	K
Field	Physical activity programmes	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	Physical activity (promotion) strategies	☑									☑	
Organisational Level	National									☑	☑	
	Regional		☑	☑								
	City, town or local neighbourhood	☑			☑	☑	☑	☑	☑			☑
Client group	Community-dwelling older adults	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	Institution-dwelling older adults		☑			☑		☑				☑
Sector	Government	☑	☑				☑				☑	
	Non government organisation			☑	☑	☑		☑	☑	☑		☑
Professional Expertise	Health care									☑		
	Health promotion			☑								
	Sport/ recreation/ physical activity facility management	☑							☑			
	Sport/recreation/ physical activity instruction/ supervision/guidance	☑	☑			☑	☑	☑	☑	☑	☑	
	Health–related exercise facility management											
	Health–related exercise instruction/ supervision/guidance											
	Education						☑	☑				
	Research			☑	☑			☑	☑			
	Social services, social care or social welfare											☑
	Socio–cultural organisation											☑

Field without expert

National qualifications in the supervision/ guidance of Physical Activity

Methods

The questionnaire completed by the 11 national Experts also asked about the availability in their countries of national qualifications in the supervision or guidance of physical activity for adults in general and for older adults in particular. It asked whether such qualifications were optional or compulsory, and requested detailed information about assessment, validation and revalidation of the higher level, older-person-specific qualification. Finally, it asked about the existence in their country of a professional register of qualified instructors (*i.e.* a regulatory body that holds a current record of those qualified to guide or supervise physical activity and of their level of specialist qualification).

Results

Basic level qualification

Table 5 shows the PA Experts' responses concerning the availability in Portugal of a basic level qualification in supervising or guiding physical activity or exercise by adults in general and the requirement of this qualification. There is no consensus between respondents, while 5 experts did not recognized the existence of a basic level qualification, 6 experts had the opposite opinion. Additionally, all this 6 experts named the same basic qualification: a physical activity graduation. A different pattern might be discerned for the requirement of this qualification, since from the 6 experts that previously identified the availability of a basic level qualification, 3 judged that this qualification requirement is implemented properly, 2 had the opposite opinion (the qualification is not required) and 1 expert had no opinion ("don't know"). Assessing the proportion of instructors guiding/ supervising older participants that have the entry level qualification is difficult, because experts may overestimate or underestimate the correct prevalence, and as a result only two answers were given, and the estimation was 75%, the others 4 experts indicated that they "Don't known" (see table 7).

Table 5 - *PA Experts' responses concerning the availability in Portugal of a basic level qualification in supervising or guiding physical activity or exercise by adults in general (XQ11 & 13).*

	Basic level qualification	
	Available	Required
Yes	**6**	**3**
No	**5**	**2**
Don't know	0	**1**
Not applicable	0	**5**

Total	11	11

Higher level qualification

Table 6 gives a combined overview over the availability in Portugal of a higher level qualification in supervising or guiding physical activity or exercise by older adults. While this availability was confirmed by a large number of respondents (8) this does not necessarily imply that this qualification is also "required". The figure below show that only one expert consider that this higher level requirement is implemented properly, while the majority of experts think it is important that this higher level qualification is implemented properly. Judging from this table there is no enough evidence to support the existence of an external verification, being corroborated just by 3 experts. As we discuss earlier, assessing the proportion of instructors guiding/ supervising older participants that have the higher level qualification is difficult, as well, because experts may overestimate or underestimate the correct prevalence, and as a result only one answers were given, and the estimation was 25% (see table 7).

Table 6 - *PA Experts' responses concerning the availability in Portugal of a higher level qualification in supervising or guiding physical activity or exercise by older adults (XQ 14 & 16-18).*

	Higher level qualification			
	Available	Required	Important	External verification
Yes	**8**	**1**	**8**	**3**
No	**2**	**6**	0	**4**
Don't know	**1**	**1**	**2**	**2**
Not applicable	0	**2**	**1**	**2**
Total	11	10	11	11

Table 7 - *PA Experts' estimates of the prevalence of the basic, entry level qualification and the higher level (older-person-specific) qualification among instructors guiding or supervising physical activity by older participants (XQ21 & 22).*

	Entry level	Higher level
0%	0	0
25%	0	**1**
50%	0	0
75%	**2**	0
100%	0	0
Don't know	**4**	**8**
Not applicable	**5**	**2**
Missing data	0	0
Total	11	11

Assessment, validation and revalidation

Table 8 shows the respondents' ranking of the components of the assessment for the higher level (older person specific) qualification. The components with the best overall rankings are Summative assessment of knowledge (B), and the Practical teaching competence assessed with older participants (D). Nevertheless, the results presented include only 6 experts, since 3 experts had some reservations (selected "Don't know") and 2 experts were excluded (question not applicable).

Table 8 - *PA Experts' responses concerning the components of the assessment for the higher level (older person specific) qualification (XQ19).*

	A	B	C	D	Not applicable	Don't know
Yes	**2**	**6**	**3**	**4**	**2**	**3**
No	**9**	**5**	**8**	**6**		

A = Verification of current cardiopulmonary resuscitation (CPR) certification
B = Summative assessment of knowledge
C = Practical teaching competence assessed with participants of any age
D = Practical teaching competence assessed with older participants

In order to check the requirements for retention of the higher level (older person specific) qualification , respondents were asked to select all the applied options (table 9). The rating shows that only the *evidence of current CPR certification*, the *evidence of continuing professional development* and *a practical test of teaching competence* are represented. Moreover, this revalidation is not well implemented, due to the fact that those requirements were only selected by 2 experts. A third expert considers the development of a thesis as the necessary requirement for retention of the higher level qualification.

Table 9 - *PA Experts' responses concerning the requirements for retention of the higher level (older person specific) qualification (XQ20).*

	Yes
Payment of fee	0
Evidence of current CPR certification	**2**
Evidence of continuing professional development (CPD)	**1**
A test of knowledge	0
A practical test of teaching competence	**1**
Other	**1**
Nothing	**3**
Not applicable	**5**

Professional register

Table 10 summarizes the PA Experts' responses concerning the existence in Portugal of a professional register of PA instructors and their qualifications and concerning its membership requirements for registration to supervise PA by adults in general (*) and by older adults in particular (**). Only two experts confirmed the existence of a professional register of PA instructors, although the requirement of a basic, entry level qualification requirement for professional registration was assumed by one expert, and the higher level was consider as not required.

Table 10 - *PA Experts' responses concerning the existence in Portugal of a professional register of PA instructors and their qualifications and concerning its membership requirements for registration to supervise PA by adults in general (a basic, entry level qualification*) and by older adults in particular (a higher level qualification**) (XQ23 & 25-26).*

	Professional register		
	Exists	Membership requires	
		Entry level*	Higher level**
Yes	**2**	**1**	0
No	**7**	0	**2**
Don't know	**2**	**3**	**2**
Not applicable		**7**	**7**
Missing data	0	0	0
Total	11	11	11

'Successful' PA programmes

Methods

Selection of programmes (including definitions)

Each national Expert was asked to identify a successful PA programme for older people in their country and assist its director to complete a questionnaire concerned primarily with the characteristics of the chosen PA programme. The national Experts were instructed that their choice should be guided by the following definitions.

Physical activity (or PA) – Any bodily movement that is produced by the contraction of skeletal muscle and that substantially increases energy expenditure *e.g.* running, walking, swimming, lifting or carrying a heavy weight.

PA programme – A schedule of selected physical activities in which individuals can choose to engage. *e.g.* An overall programme of activities and PA opportunities for older people OR the components of such a programme, such as a programme of old time dancing classes, supervised resistance training, supervised, seated exercise classes, hill walking groups or aqua classes etc.

A successful PA programme – A PA programme is 'successful' if a PA expert in that country considers it to be successful. This judgment may be based on some or all of a wide range of possible effects of the programme. These might include, for example, demonstrable improvements in physical fitness or quality of life, growing membership, client loyalty, etc.

To be eligible for consideration a successful PA programme must have been running for at least 6 months and if it has ceased, this must have occurred no more than 2 years previously.

Distribution and return of programme questionnaires

On 8 June 2007, each of the 11 Portuguese Experts was sent a template of a explanatory letter of invitation and electronic copies of the other two questionnaires for distribution, in due course, to the directors of their chosen PA programme and PA promotion strategy. If an invitation was declined, because the programme director did not agree to participate or because the programme had already been chosen by another PA Expert, then the PA Expert was to identify another successful PA Programme and send another invitation letter. PA Experts were not permitted to select their own PA Programme.

The PA Experts were encouraged to give their PA Programme Director on-going support and to ensure that the questionnaire was returned to the WP5 coordinator by 10th August, 2007. Defaulters were reminded in mid-July (e-mail), mid August (e-mail), and early September (e-mail). The last reminder included a warning that if questionnaires were not returned by 20 September, it might not be possible for their data to be included in the final analysis and in the national and cross-national reports.

Results

Selection of programmes

Eight potential programmes were selected and all the eight programme directors agreed to participate. Three Experts decide on the same programme selected by another Expert, which was not allowed. In these specific cases it was impossible to encourage the experts to nominate another programme, because those Experts questionnaires were returned by 21 September, too late for an alternative approach. Unfortunately, the final number of PA programmes selected (8 different programmes; for more details, see *Appendix Two*) was lesser then the agreed eleven. On the other hand, another difficulty come to light during the selection process, seven of the eight PA programmes directors selected were previously selected as PA expert, although all the PA Experts did not selected there own PA programme, being instead selected by another Expert (*which was permitted).*

Return of programme questionnaires

The Portuguese PA Experts assume the assignment of returning the programme questionnaires to the EUNAAPA Partner, and for that reason they send the three questionnaires at the same time (expert questionnaire, programme questionnaire and promotion strategy questionnaire). In this section we provide the same procedures, described for the return of expert questionnaires. By 18 July 2007, three of the eleven PA programme questionnaires had been returned. By 10 August, two more PA Experts had returned their questionnaires, and by 31 August, despite several reminders (see above), the 6 defaulters had still to return their Experts' questionnaires. Following the WP5 Leader decision to set a new deadline (20 September 2007) we informed all the defaulters that they had to send back the questionnaires till 14 September, and by this time we received three of the 6 lacking questionnaires. At last, by 21 September the last 3 PA programme questionnaires had been returned. Unfortunately, all the 3 PA programme had been identified by another expert, and according the agreed protocol those duplications were deleted.

Programme directors' educational backgrounds

Table 11 shows the programme directors' educational background. All respondents come from the exercise /sport science area.

Table 11 - *Educational backgrounds of PA Programme Directors selected by Portuguese national Experts (ProgQ4).*

	PA Programme Director								
	A	B	C	D	E	F	G	H	Total
Medicine									0
Other Health Profession									0
Exercise/ Sport Science	☑	☑	☑	☑	☑	☑	☑	☑	8
Other									0

Catchment areas of programmes

Information concerning the geographical areas of programmes is given in Table 12. It must be noted that none of the programmes comprise the national level.

Table 12 *- PA Programme Directors' responses concerning the geographical classification of their programme (ProgQ9).*

	Number
National	0
Regional	**2**
Limited to a city/town	**5**
Limited to a local neighbourhood	**1**
Missing data	0
Total	8

Ages of programmes

The programme description also included information about the age of programmes, as illustrated in Table 13. The results indicate that the length of time range between less than 1 year and more than 10 years. The most common age was "1 to 5 years" and "6 to 10 years", with 3 respondents each.

Table 13 *- PA Programme Directors' responses concerning the length of time their programme has existed (ProgQ10).*

	Number
Less than 1 year	**1**
1 to 5 years	**3**

6 to 10 years	**3**
More than 10 years	**1**
Missing data	0
Total	8

Components of overall programmes

The following tables (14, 15 and 16) provide further information of overall programmes, including data concerning which component programmes are included (see table 14), characteristics that best describe their overall programmes (see table 15) and the types of facilities used (see table 16).

The majority of the overall programmes don't comprise multiple components, including basically two different components and the most common is the community based senior fitness programmes (groups). Thus, only one overall programme includes 3 components: community based senior fitness programmes, a falls prevention programme and a medical condition-specific programme (osteoporosis). On the other hand, 6 out of 8 respondents consider their overall programmes to be described by several settings (see Table 15). Therefore, while all overall programmes use Sport / physical recreation facilities, some programmes use multiple types of facility. This may be partly due to the fact that these overall programmes include more than one component and they share quite a few fields.

Table 14 - *PA Programme Directors' responses concerning which component programmes are included in their overall programmes (ProgQ11).*

		Number
Masters (elite competitor) programme		0
Community based senior fitness programmes (groups)		**7**
Community based senior chair-based programmes		**1**
Home based exercise programmes (individual)		0
Exercise referral / General Practitioner referral programmes		0
Falls Prevention Programmes		**3**
Medical condition-specific programmes	Cardiac rehabilitation	0
	Pulmonary rehabilitation	0
	Arthritis programmes	**1**
	Other medical condition	**1**
Other programmes		0

Table 15 - *PA Programme Directors' responses concerning the description of their overall programmes (ProgQ12).*

	Number
Group activity	**6**
Individual activity	**1**
Indoors	**6**
Outdoors	**3**

Water-based	**6**
Land-based	**6**

Table 16 - *Programme Directors' responses concerning the types of facilities used by their overall programmes (ProgQ13).*

	Number
Sport / physical recreation facility	**8**
Community centre	**2**
Day resources centre	**2**
Participant's private dwelling	0
Sheltered housing, assisted living facility, care home or nursing home	**2**
Other *(Faculty/ university facility)*	**2**

Characteristics of programmes' clients

Figure 1 offers a visual depiction of programmes participants' age, including age groups for whom their overall programme is intended and the average age of participant actually attending a typical session of the programme. Whereas the maximum age intended is in most cases 90-100 years, the average age of participants range between 55-75 years.

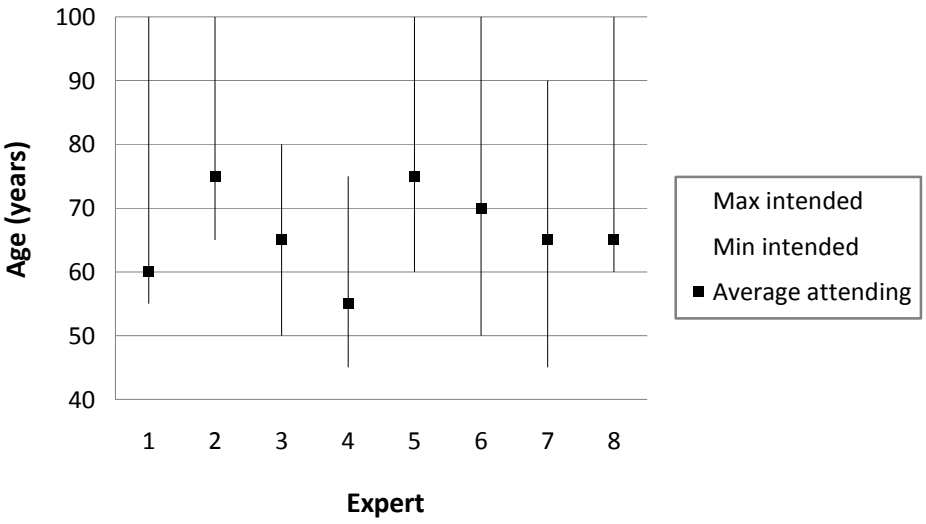

Figure 1 *- PA Programme Directors' responses concerning the age groups for whom their overall programme is intended and the average age of participant actually attending a typical session of the programme (ProgQ14-15).*

Table 17 provides the 'category' of participant, by type of dwelling and level of functional mobility, for whom their overall programme is intended. Note that the entire overall programmes are intended to community- dwelling older adults, and only three include both, community- and institution-dwelling older adults. With respect to the level of functional mobility, it must be noted

that every overall programmes are intended to participants with a good level of functional mobility, particularly participants that "walks outdoors with no walking aids and no assistance or supervision by another person" and only 3 programmes also include participants with less functional mobility (walks outdoors with a walking aid).

Table 17 - *PA Programme Directors' responses concerning the 'category' of participant for whom their overall programme is intended (ProgQ16-17).*

		Number
Type of dwelling	Community- dwelling older adults	**5**
	Institution – dwelling older adults	0
	Both, together (in the same group)	**1**
	Both separately (in different groups)	**2**
Level of functional mobility	Frequently walks vigorously or runs	0
	Walks outdoors with no walking aids and no assistance or supervision by another person	**8**
	Walks outdoors with a walking aid but no assistance or supervision by another person	**3**
	Walks outdoors only with assistance or supervision by another person	0
	Never walks outdoors	0

Another important characteristic of their overall programme is the data concerning the gender proportion (results are shown in table 18).

Table 18 - PA Programme Directors' estimates of the proportion of participants in their overall programme that are women *(ProgQ18).*

	Number
0%	0
25%	0
50%	0
75%	**6**
100%	**2**
Don't know	0
Total	8

Characteristics of programmes' classes

The following section provides estimations of 'group' sizes (see table 19), of the ratio of instructors to participants (see table 20), of the maximum possible frequency and the usual frequency (see table 21), of the proportion of current participants that have attended their overall programme for at least a year (see table 22).

In general, Portuguese PA programmes have similar qualities, offering a slight range of options. The 'group' size range between 16-20 and 26-50 participants, and the ratio of instructors to participants in a typical session of their programme is 1 to 2-10 participants (3 programmes) or 1 to 11-25 participants (3 programmes). The common maximum possible frequency and the usual frequency with which individuals participate in their overall programme are 3-4 times per week. Finally, 5 PA Programme Directors' estimates that 75% of current participants that have attended their overall programme for at least a year, and 2 PA Programme Directors made a higher estimate (100%).

Table 19 - PA Programme Directors' estimates of 'group' sizes used in their overall programmes *(ProgQ19).*

	Number
1	0
2 – 5	0
6 – 10	0
11 – 15	0
16 – 20	**3**
21 – 25	**3**
26 – 50	**2**
51+	0
Don't know	0

Table 20 *- PA Programme Directors' estimates of the ratio of instructors to participants in a typical session of their programme (ProgQ20).*

	Number
1 : 1	0
1 : 2 - 10	**4**
1 : 11 - 25	**4**
1 : 26 - 50	0
1 : 51+	0
Don't know	0
Total	8

Table 21 *- PA Programme Directors' estimates of the maximum possible frequency and the usual frequency with which individuals participate in their overall programme (ProgQ21-22).*

	Maximum	Usual
<1	0	0
1	0	0
2	0	**3**
3 – 4	**6**	**5**
5 – 7	**2**	0
8+	0	0
Don't know	0	0
Total	8	8

Table 22 - *PA Programme Directors' estimates of the proportion of current participants that have attended their overall programme for at least a year (ProgQ23).*

	Number
0%	0
25%	0
50%	0
75%	**5**
100%	**2**
Don't know	**1**
Total	8

Objectives, outcomes, monitoring and feedback

Tables 23-26 expose aspects concerning the aims and objectives of the PA programmes. The results shown in table 23 suggest that "improved physical function" and "health promotion" are likely the most important overall aims. "Opportunities to socialise" and "disease prevention" were also provided by a few programme directors, 3 and 2 respectively. On the other hand, the participant satisfaction is formally measured only in 3 PA programmes, and the frequency range between 1-2 and 3-6 times per year.

Table 23 - *PA Programme Directors' responses concerning the two most important overall aims of their programme, from the point of view of its sponsoring organisation (ProgQ24).*

	Number
Health promotion	**5**
Improved competitive performance	0
Disease prevention	**2**
Improved physical function	**6**
Improved mood	0
Opportunities to socialise	**3**
Improved self esteem / confidence	0
Other	0
Don't know	0
Total	16

Table 24 - *PA Programme Directors' estimates of the frequency (times per year) with which the satisfaction of participants in their programme is formally measured (ProgQ25).*

	Number
Not at all	**5**
1 – 2	**1**
3 – 6	**2**

More than 6	0
Don't know	0
Total	8

Portuguese PA programmes showed a valid interest for participant' aims, as shown in table 25, whereas only 1 overall programme don't formally surveyed participants to what their aims of being involved in the overall program are, neither record objective outcome measures for participants. Note that the programme director that respond "no" in question 26, respond "not applicable" in question 27, although there is no box for that answer in table 25.

Table 25 - *PA Programme Directors' responses concerning whether (A) participants are formally surveyed for the aims of their involvement in the programme, (B) programmes are adjusted according to participants' aims, and (C) objective outcome measures are recorded for participants at regular intervals (ProgQ26-28).*

	survey of aims	programme adjusted for aims	outcomes measured
Yes	**7**	**7**	**6**
No	**1**	0	**2**
Don't know	0	0	0
Total	8	7 (1 expert - not applicable)	8

In relation to which objective measures are recorded at regular intervals, the amount of objectives known to be currently recorded varies significantly between respondents, as shown in table 26. However, it must be noted that none of the programmes measured the "social support".

Additionally, other objective measures were indicated by 3 different programmes, which include "daily physical activity/ neuromuscular function", "plasma lipids and lipoproteins" and plasma lipids and lipoproteins/ plantar pressure/ posture/ quality of life".

Table 26 - *PA Programme Directors' responses concerning which objective measures are recorded at regular intervals (ProgQ29).*

	Number
Strength or explosive power	**4**
Maximal oxygen uptake (directly measured)	**3**
Sub maximal test of aerobic fitness	**4**
Balance	**5**
Joint range of motion	**5**
Body composition	**5**
Bone density	**3**
Mood / depression	**4**
Social support	0
Other	**3**
Not applicable	**1**

Pre-participation assessment

The pre-participation assessment is designed to guarantee a safe participation of the potential clients, and include information concerning the requirement and form of a health check and a health screening tool. Only 2 programmes don't require that potential participants have a health check for entry to their programme and 3 programmes don't requires completion of a health screening tool (see table 27). Although the "assessment by a doctor" is the most commonly form of health check, a number of different forms are required for entry on PA overall programmes, as shown in table 28. Moreover, two PA programmes required two different health check for a potential participant be eligible for entry to their programme, making a total of 8 responses, although only 6 programme directors answered. One programme performs a "health screening tool" and an "assessment by a doctor" and the other programme requires an "assessment by a doctor" and "by some other healthcare professional".

Table 27 - PA Programme Directors' responses concerning whether eligibility for entry to their programme requires the potential participant to have a health check (ProgQ30) and *whether requires completion of a health screening tool (ProgQ32).*

	Health check	Completion of a health screening tool
Yes	**6**	**5**
No	**2**	**3**
Don't know	0	0
Total	8	8

Table 28 *- PA Programme Directors' responses concerning the form of health check required for a potential participant to be eligible for entry to their programme (ProgQ31).*

	Number
Completion of a health screening tool	**1**
Assessment by a doctor	**4 (+2)**
Assessment by a doctor who is a sports medicine specialist or by the programme doctor	0
Assessment by some other healthcare professional	**1**
Other	0

Concerning only the 5 programmes that eligibility for entry to their programme requires completion of a health screening tool, one of them did not respond (missing value) question 33 (whether their health screening tool is internationally recognised), whereas no more than 2 health screening tool are internationally recognised, as shown in table 29. Moreover, every one health screening tool was adapted for their programme. Respondents were asked to name the health screening tool, and they identified 5 health screening tools: "Health Questionnaire", "Knee Osteoarthritis, Health and Physical Characterization", "Medical consult", "Medical questionnaire adopted from Best Study (University of Arizona)" and "Individual sport-medical questionnaire".

Table 29 - *PA Programme Directors' responses concerning whether their health screening tool is internationally recognised and whether it had been adapted for their programme (ProgQ33 & 35).*

	Internationally recognised	Adapted for the programme
Yes	**2**	**5**
No	**2**	0
Not applicable	**3**	**3**
Total	7	8

The following responses include only the 5 PA programmes that require completion of a health screening tool by the potential participant, and only the positive answers were recorded.

Table 30 - *PA Programme Directors' responses concerning the questions included in the health screening tool used by their programme (ProgQ36).*

	yes
Dizziness	4
Eyesight	3
Hearing	3

Of paramount importance in pre-participation assessment is whether the programme proceeds in agreement with the results of the health screening tool, such the identification of a potential problem. A total of 2 'methods' were identified (table 31).

Table 31 - *PA Programme Directors' responses concerning what is done so that an applicant can be permitted to enter a programme after a potential problem has been identified by the health screening tool (ProgQ37).*

	Number
The applicant need only sign a liability waiver	0
Applicant must obtain 'approval' from any healthcare professional	**2**
Applicant must obtain 'approval' from their doctor	**3**
Applicant must obtain 'approval' from a doctor who is a sports medicine specialist or from the programme doctor	0
It is not possible for the applicant to be permitted to enter the programme	0
Other	0
Don't know	0
Not applicable	**3**
Total	8

Programme content

In pursuing the evidence of programme design, questions 38-45 intended to identify information in a variety of categories, such as the component(s) or aspect(s) of physical fitness which their PA

Programme aims to improve, the modalities of physical activity offered in their programme, the extent to which 'progression' is part of their overall programme, the length of a usual warm up and cool down of a session, length of a usual workout component of a session, and how, within this programme, they cater for the exercise needs of older people with chronic medical conditions.

Table 32 lists the component(s) or aspect(s) of physical fitness which their PA Programme aims to improve. Judging from this table, every programmes aim to improve at the same time different components of physical fitness.

Table 32 *- PA Programme Directors' responses concerning the component(s) or aspect(s) of physical fitness which their PA Programme aims to improve (ProgQ38 & 40).*

	As in response to:	Number
Strength	*ProgQ40*	**8**
Explosive power	*ProgQ40*	**2**
Endurance	*ProgQ38*	**7**
Coordination – Balance	*ProgQ38*	**8**
Joint range of motion	*ProgQ40*	**8**
Body composition	*ProgQ40*	**6**
Bone density	*ProgQ40*	**1**
Other	*ProgQ40*	0

Table 33 gives an overview over the modalities of physical activity that PA programme directors consider to be offered in their programme. It must be noted that some modalities are not represented, such as: Cycling, Group Sports/ Ball Games, running and skiing. The most offered modalities are linked to aquatics (including swimming and aqua exercises), walking, machine base equipment and adapted exercise (including back pain prevention, osteoporosis prevention, falls prevention, pelvis floor exercise and knee osteoarthritis).

Table 33 *- PA Programme Directors' responses concerning the modalities of physical activity offered in their programme (ProgQ39).*

		Number
Aquatics	Swimming	**3**
	Aqua exercises	**6**
Cycling	On Road/ Paths	0
	Off Road/ Track/ Hills	0
Group Sports/ Ball Games	Badminton	0
	Billiard Sports	0
	Boules	0
	Bowling	0
	Golf	0
	Minigolf	0

	Short tennis	0
	Tennis	0
Recreational Movement	Dance	**4**
	Movement to exercise	0
	Exercise to music	0
	Derived from Pilates	0
	Derived from Tai Chi	**2**
	Derived from Qigong	**1**
	Derived from Yoga	**1**
Running	Indoor running (not on treadmill)	0
	Outdoor running/ Track	0
	Orienteering	0
Skiing	Cross Country Skiing	0
	Downhill (Alpine Skiing)	0
	Ski Touring	0
Walking	Indoor Walking (not on treadmill)	**2**
	Outdoor Walking on path/ track	**3**
	Outdoor Walking groups	**4**
	Rambling or Hill Walking	0
	Trekking	0
	Nordic Walking	0
Machine based equipment	Circuits	**1**
	Treadmill	**3**
	Cycle	**3**
	Rowing	**4**
	Stepper	**2**
	Cross – trainer	**2**
	Cable machines/ fixed resistance	**2**
	Dumbells / Free weights	**2**
	Physioballs (Swiss balls/ exercise balls) for balance	**1**
	Resistance balls/ bands/ tubes	**3**
	Balance disks/ wobbleboards	**3**
	Other (vibratory platform)	**1**
	Competitive sport (Boccia)	**1**
Adapted exercise	Back pain prevention	**3**
	Osteoporosis prevention	**3**
	Falls prevention	**5**
	Pelvis Floor exercise	**2**
	Chair-based exercise	0
	Cardio rehab	0
	Pulmonary rehab	0
	Other (Knee Osteoarthritis)	**1**

The information concerning the extent to which 'progression' is part of their overall programme is presented in table 34. According to results, all programmes take in account the training concept progression, 6 PA programme directors consider that progression is always present and the other 2

PA programme directors report that 'progression' is only part of their overall programme for the first few weeks and for the first few months.

Table 34 *- PA Programme Directors' responses concerning the extent to which 'progression'[1] is part of their overall programme (ProgQ41).*

	Number
Never	0
For the first few weeks only	**1**
For the first few months only	**1**
Always	**6**
Don't know	0
Total	8

[1] defined as a systematic increase in the intensity or resistance, the frequency and/or duration of exercise

The length of a usual warm up was estimate by PA Programme Directors ranging between 1-5 minutes and 11-15 minutes and, on the other hand, the length of a usual cool down was estimate between 1-5 minutes and 6-10 minutes. In both cases the most common duration is 6-10 minutes (table 35). Additionally, 20 - 40 minutes was the PA Programme Directors' estimation of the length of a usual workout component of a session (table 36).

Table 35 *- PA Programme Directors' estimates of the length of a usual warm up at the beginning of a session in this programme and of the length of a usual cool down (or 'wind down' or 'warm down') at the end of a session (ProgQ42-43).*

	Warm up	Cool down
0 minutes	0	0
1 – 5 minutes	**1**	**3**
6 – 10 minutes	**5**	**5**
11 – 15 minutes	**2**	0
16 – 20 minutes	0	0
Don't know	0	0
Total	8	8

Table 36 *- PA Programme Directors' estimates of the length of a usual workout component of a session in this programme (ProgQ44).*

	Number
0 minutes	0
10 minutes	0
20 minutes	**1**
30 minutes	**4**
40 minutes	**3**
50 minutes	0

60 minutes	0
More than 60 minutes	0
Don't know	0
Total	8

According the data presented in table 37, the only approach concerning how they cater for the exercise needs of older people with chronic medical conditions is "adapted exercise, with participants included in the mainstream older person's group(s)". 3 PA Programme Directors consider that "this is not possible".

Table 37 *- PA Programme Directors' responses concerning how, within this programme, they cater for the exercise needs of older people with chronic medical conditions (ProgQ45).*

	Number
This is not possible	**3**
Adapted exercise, with participants in disease–related groups	0
Adapted exercise, with participants in frailty–related or disability–related groups	0
Adapted exercise, with participants included in the mainstream older person's group(s)	**4**
Don't know	**1**
Total	8

Instructors' qualifications and training

The minimum level of qualification required for instructors delivering the PA programme to older participants is the basic qualification or in alternative (for 2 PA overall programmes) is required that instructors are physical activity (for older people) students (table 38). Moreover, analysis of question 47 demonstrated that instructors for the programme haven't to be a member of a professional register.

Table 38 *- PA Programme Directors' responses concerning minimum level of qualification required for instructors delivering this programme to older participants (ProgQ46).*

	Number
A basic (entry level) qualification	**6**
A higher level (old age specific) qualification	0
Other	**2**
Don't know	0

Table 39 lists the PA Programme Directors' estimates of the proportion of instructors guiding/ supervising older participants that have only the entry level qualification or the higher level qualification *(refer to those holding both the entry level qualification and the higher level*

qualification). The entry level qualification is widely represented, whereas higher level qualification is much rarer.

***Table 39**- PA Programme Directors' estimates of the proportion of instructors guiding/ supervising older participants, in this programme, that have the entry level qualification or the higher level qualification (ProgQ48 & ProgQ49).*

	Entry level qualification	Higher level qualification
0%	**1**	**1**
25%	0	**5**
50%	0	0
75%	**1**	0
100%	**6**	0
Don't know	0	**2**
Total	8	8

Considering that merely 5 PA programmes provide ongoing in-service training for the instructors, the number of hours in–service training provided each year for the instructors is identical (1h). In gathering the data on which the previous results are based, we list the topics recently covered in in-service training for this programme's instructors: Falls prevention, Flexibility, Practice Plans, Balance, Exercise benefits for older adults, Osteoporosis, Utility of assessment results, CAD, Fitball, Interaction with participants, Practice major concerns.

Respondents were also asked about the presence of unpaid volunteers. Notice that 6 answers were affirmative and 2 negative. The ways that those unpaid volunteers contribute to the programme are summarized in table 40.

***Table 40** - PA Programme Directors' responses concerning ways that unpaid volunteers contribute to this programme (ProgQ54).*

	Number
Not at all	0
Instruction	**1**
Instructor's assistant	**3**
'Buddying' a participant	**2**
Peer mentoring participants	**1**
Administration	0
Transport	**1**
Refreshments	0
Other (test assistants)	**2**
Don't know	0
Not applicable	**2**

Client safety

Table 41 shows the number of PA programmes who has specific protocols to be followed in emergency situations or in respect of the use, storage and maintenance of equipment.

Table 41 *- PA Programme Directors' responses concerning whether this programme has specific protocols to be followed in emergency situations or in respect of the use, storage and maintenance of equipment (ProgQ55&57).*

	Emergency protocols	Equipment protocols
Yes	**2**	**4**
No	**6**	**4**
Don't know	0	0
Total	8	8

The frequency of staff training in the emergency and equipment protocols is once a year (table 42). In fact, the responses to question 56, concerning the emergency protocols characterize only 2 PA programmes, noted previously on question 55, and the question 58 illustrate only 4 PA programmes, those that claimed have specific protocols and/or procedures to be followed in respect of equipment use, storage or maintenance.

Table 42 - PA Programme Directors' responses concerning the frequency of staff training in the protocols to be followed in emergency situations or in respect of the use, storage and maintenance of equipment *(ProgQ56&58).*

	Emergency protocols	Equipment protocols
3 monthly	0	0
6 monthly	0	0
Annually	**2**	**4**
Never	0	0
Don't know	0	0
Not applicable	**6**	**4**
Total	8	8

Finance, transport and refreshments

Another related point is the funding records. The estimates of the total cost (per participant per session) of providing their programme (excluding transport and refreshments but including the cost of the room, lighting, heating, maintenance, instructor's fee, administration) are given in table 43. The proportion of cost paid by each participant in their programme is expressed by different fractions, ranging between 0% and 75% (table 44).

Table 43 *- PA Programme Directors' estimates of the total cost (per participant per session) of providing their programme (ProgQ59).*

	Number
Up to € 2	**1**
More than € 2, up to € 5	0
More than € 5, up to € 10	**2**
More than € 10	**2**
Don't know	**3**
Total	8

Table 44 *- PA Programme Directors' estimates of the proportion of cost paid by each participant in their programme (ProgQ60).*

	Number
0%	**3**
5%	**2**
10%	0
25%	0
50%	**1**
75%	**1**
100%	0
Don't know	**1**
Total	8

Transport and refreshments can also be used to characterize a PA programme. Therefore, is important to determine whether transport and refreshments are provided for participants (table 45). Actually, transport is provided to every participant only by 1 PA programme and one other programme provides for some participants/some session transport and refreshments. The estimates of the proportion of the cost of transport and of refreshments that is paid by each participant in their programme are presented in table 46. In fact, both transport and refreshments are mainly supported by the programme, because the proportion of that *cost paid by each participant* range, according PA Programme Directors' estimates, between 0% and 10%.

Table 45 *- PA Programme Directors' responses concerning whether transport and refreshments are provided for participants in their programme (ProgQ61 and 63).*

	Transport	Refreshments
Yes, to everyone	**1**	0
Yes, selectively	**1***	**1****
No	**6**	**7**
Don't know	0	0
Total	8	8

*some participants, some sessions

**some sessions

Table 46 *- PA Programme Directors' estimates of the proportion of the cost of transport and of refreshments that is paid by each participant in their programme (ProgQ62 and 64).*

	Transport	Refreshments
0%	**1**	**1**
5%	0	0
10%	**1**	0
25%	0	0
50%	0	0
75%	0	0
100%	0	0
Don't know	0	0
Total	2	1

Publicity, marketing and promotion

Physical activity programmes obviously involves publicity, marketing or promotion. In this respect, the methods which have been used were examined in detail (table 47). Following are listed the methods largely used (score minimum of 50%, and rank from lowest to highest): Advertising through elder-oriented organisations, Health premises leafleting, Websites, Talks to local groups, and Word of mouth. The majority programmes have used multiple methods to publicise, market or promote what they have to offer, some of them used 8 up to 15 different techniques.

Table 47 *- PA Programme Directors' responses concerning the methods which have been used to publicise, market or promote their programme (ProgQ65).*

	Number	%
Advertising in local newspapers	**3**	**37,5**
Advertising in national/ regional newspapers	**2**	**25**
Advertising in elder-oriented magazines	0	0
Advertising through elder-oriented organisations	**4**	**50**
Features in local newspapers	**3**	**37,5**
Features in national/ regional newspapers	**1**	**12,5**
Features in elder-oriented magazines	0	0
Advertising on local radio	**3**	**37,5**
Advertising on national/ regional radio	**1**	**12,5**
Advertising on local TV	0	0
Advertising on national/ regional TV	**3**	**37,5**
Features on local radio	**2**	**25**
Features on national/ regional TV	0	0
Features on local TV	0	0
Features on national/ regional TV	0	0
Neighbourhood leafleting	**2**	**25**
Sports hall leafleting	**3**	**37,5**
Health premises leafleting	**4**	**50**
Leafleting in community centres for older people	**2**	**25**

Talks to local groups	**5**	**62,5**
Word of mouth	**6**	**75**
Websites	**4**	**50**
Open days	**1**	**12,5**
Bring a friend	**3**	**37,5**
Discounts	**1**	**12,5**
Multiple session bookings	0	0
Other (Family doctor)	**1**	**12,5**

In order to improve recruitment of new participants and/or motivation of existing participants, the programme may found it useful to capitalise on national or regional campaigns related to aspects of ageing and health or to build partnerships with local healthcare professionals or organisations. On this particularly matter, the descriptive data and results can be found in table 48. The majority of PA programmes haven't found useful both strategies.

Table 48 *- PA Programme Directors' responses concerning whether their programme had found it useful (1) to capitalise on national or regional campaigns related to aspects of ageing and health in order to improve recruitment of new participants and/or motivation of existing participants, and/or (2) to build partnerships with local healthcare professionals or organisations (ProgQ66 and 67).*

	(1)	(2)
Yes	**3**	**1**
No	**5**	**7**
Have not tried	0	0
Don't know	0	0
Total	8	8

'Successful' PA Promotion Strategies

Methods

Selection of programmes (including definitions)

Each national Expert was asked to identify a successful PA promotion strategy for older people in their country and assist its director to complete a questionnaire concerned primarily with the characteristics of the chosen PA promotion strategy. The national Experts were instructed that their choice should be guided by the following definitions.

Physical activity (or PA) – Any bodily movement that is produced by the contraction of skeletal muscle and that substantially increases energy expenditure *e.g.* running, walking, swimming, lifting or carrying a heavy weight.

PA promotion strategy – An intervention, device or plan which it is intended will increase the PA of a community *e.g.* Improved street lighting or an educational TV advertising campaign.

A successful PA promotion strategy – A PA promotion strategy is 'successful' if a PA expert in that country considers it to be successful. This judgment may be based on some or all of a wide range of possible effects of the strategy. These might include, for example, demonstrable improvements in swimming pool use, in self-reported physical activity, increasing bicycle sales *etc.*.

To be eligible for consideration a successful PA promotion strategy must have been running for at least 6 months and if it had ceased, this must have occurred no more than 2 years previously.

Distribution and return of promotion strategy questionnaires

On 8 June 2007, each of the 11 Portuguese Experts was sent a template of an explanatory letter of invitation and electronic copies of the other two questionnaires for distribution, in due course, to the directors of their chosen PA programme and PA promotion strategy. If an invitation was declined, because the promotion strategy did not agree to participate or because the promotion strategy had already been chosen by another PA Expert, then the PA Expert was to identify another successful PA promotion strategy and send another invitation letter. PA Experts were not permitted to select their own PA promotion strategy.

The PA Experts were encouraged to give on-going support to the director of their chosen PA promotion strategy and to ensure that the questionnaire was returned to the WP5 coordinator by 10th August, 2007. Defaulters were reminded in mid-July (e-mail), mid August (e-mail), and early September (e-mail). The last reminder included a warning that if questionnaires were not returned by 20 September, it might not be possible for their data to be included in the final analysis and in the national and cross-national reports.

Results

Selection of promotion strategies

Seven potential programmes were selected and all the seven PA promotion strategy directors agreed to participate. Four Experts decide on the same PA promotion strategy selected by another Expert, which was not allowed. In these specific cases it was impossible to encourage the experts to nominate another PA promotion strategy, because those Experts questionnaires were returned too late for an alternative approach. Unfortunately, the final number of PA promotion strategy selected (7 different PA promotion strategy; for more details, see *Appendix Three*) was lesser then the agreed eleven. On the other hand, another difficulty come to light during the selection process, six of the seven PA promotion strategy directors selected were previously selected as PA expert, although all the PA Experts did not selected there own PA promotion strategy, being instead selected by another Expert (*which was permitted).*

Return of promotion strategy questionnaires

The Portuguese PA Experts assume the assignment of returning the PA promotion strategy questionnaires to the EUNAAPA Partner, and for that reason they send the three questionnaires at the same time (expert questionnaire, programme questionnaire and promotion strategy questionnaire). In this section we provide the same procedures, described for the return of PA programme questionnaires. By 18 July 2007, three of the eleven PA promotion strategy questionnaires had been returned. By 10 August, two more PA Experts had returned their questionnaires, and by 31 August, despite several reminders (see above), the 6 defaulters had still to return their PA promotion strategy questionnaire. Following the WP5 Leader decision to set a new deadline (20 September 2007) we informed all the defaulters that they had to send back the questionnaires till 14 September, and by this time we received three of the 6 lacking questionnaires. At last, by 21 September the last 3 PA programme questionnaires had been returned. Unfortunately, 4 PA promotion strategies had been identified by another expert, and according the agreed protocol those duplications were deleted.

Promotion strategy directors' educational backgrounds

Table 49 shows the promotion strategy directors' educational background. All respondents come from the exercise /sport science area.

Table 49 *- Educational backgrounds of the Directors of the PA Promotion strategies selected by Portuguese Experts (PSQ4).*

	PA Promotion Strategy Directors						
	A	B	C	D	E	F	G
Medicine							
Other Health Profession							
Exercise/ Sport Science	☑	☑	☑	☑	☑	☑	☑
Other							

Prevailing national context

On a national context, the information related to the current law, regulations and recommendations for promotion physical activity are summarized in table 50. At the present, PA Promotion Strategy Directors consider the existence of a law for promotion of physical activity ("*Lei de bases da Actividade Física e do Desporto*"), whereas on the second case (law or other regulations for the promotion of physical activity especially for older people) opinions vary. Some PA Promotion Strategy Directors claim that it not exists, others have the opposite opinion and others have some doubts. With respect to the existence of any national level recommendation, only 3 PA Promotion Strategy Directors provided an affirmative answer *("Sport Institute of Portugal - National Physical Activity Observatory")*.

Table 50 *- PA Promotion Strategy Directors' responses concerning whether (1) there is a law or other regulations, in Portugal, for promotion of physical activity, (2) there is a law or other regulations, in Portugal for the promotion of physical activity especially for older people, and (3) there are any national level recommendations, in Portugal, for promotion of physical activity especially for older people (PSQ 8-10).*

	(1)	(2)	(3)
Yes	**7**	**2**	**3**
No	0	**3**	**2**
Don't know	0	**2**	**2**
Total	7	7	7

Description of promotion strategies

Table 51 gives an overview over the sectors to which belong the organisations that developed, and delivered, the PA promotion strategy. It must be noted that only one promotion strategies were developed and delivered by both organisations.

Table 51 *- PA Promotion Strategy Directors' responses concerning which sectors to which belong the organisations that developed, and delivered, their promotion strategy (PSQ11 and 12).*

		Developed	Delivered
Government	National	**1**	**1**
	Regional	0	0
	Local	**3**	**3**
Non Governmental	Commercial	0	0
	Welfare/community organisation	0	**1**
	Research organisation	**4**	**3**
	Other	0	0

Levels at which promotion strategies intend to deliver may by diverse however, none of those promotion strategies cover more than one level, as described in table 52.

Table 52 *- PA Programme Directors' responses concerning the levels at which their promotion strategies aimed to deliver (PSQ14).*

	Number
National	**1**
Regional	**2**
Limited to a city/ town	**4**
Limited to a local neighbourhood	0

Table 53 describe the multiple responses from each PA promotion strategy director concerning the settings in which they considered their promotion strategy encouraged physical activity. However, it must be noted that none of the promotion strategies encourage Home based physical activity.

Table 53 *- PA Promotion Strategy Directors' responses concerning the settings in which they considered their promotion strategy encouraged physical activity (PSQ15).*

	Number
Centre based	**5**
Home based	0
Outdoors	**5**
Other (Swimming pool)	**2**
Group exercise	**6**
Independent exercise	**1**
Other	0

Table 54 lists the settings/ organisations which PA Promotion Strategy Directors consider are taking part in their promotion strategy. Actually, in some promotion strategies more than one setting/

organization are included. The following additional settings and organizations were named (as other) by the PA Promotion Strategy Directors: Municipal Sport facilities; Municipalities and enterprises; Sports Institute of Portugal.

Table 54 *- PA Promotion Strategy Directors' responses concerning the settings/ organisations which they consider are taking part in their promotion strategy (PSQ16).*

	Number
Social institutions	**3**
Primary health care	**4**
Community centres	**3**
Welfare organisations	**1**
Work place	**1**
Other	**3**
Don't know	0

The list of theoretical models/basis which was used to develop and/or deliver each promotion strategy is presented bellow (table 55).

Table 55 *- PA Promotion Strategy Directors' responses concerning the theoretical basis(es) which they consider was/were used to develop and/or deliver their promotion strategy (PSQ17-18).*

	Number
None	**2**
Health Belief Model	**3**
Protection Motivation Theory	0
Theory of Reasoned Action	**1**
Theory of Planned Behaviour	**1**
ASE* – Model	**1**
Transtheoretical Model	**1**
Other	**1**
Don't know	0

* Attitude, Social influence and self-Efficacy

Information concerning the length of the promotion strategy and the time pattern of the running is given in Tables 56 and 57, respectively.

Table 56 *- PA Promotion Strategy Directors' estimates of the time for which their promotion strategy has run (PSQ19).*

	Number
Less than 1 year	**1**
1 to 5 years	**4**

6 to 10 years	**2**
More than 10 years	0
Don't know	0
Total	7

Table 57 *- PA Promotion Strategy Directors' responses concerning the time pattern of the running of their strategy (PSQ20).*

	Number
Once only	**1**
Periodically	**3**
Continually	**3**
Other	0
Don't know	0
Total	7

The possibility to add in intermediaries to reach the intended population of each promotion strategy is described in table 58. Most of the promotion strategies incorporate Medical Practitioners, Nurses, Exercise/dance instructors, and Volunteers, besides all alternatives were selected, even if only once.

Table 58 *- PA Promotion Strategy Directors' responses concerning the intermediaries used to reach the intended population (PSQ26).*

	Number
Medical Practitioners	**5**
Nurses	**4**
Physiotherapists	**2**
Occupational therapists	**1**
Physiotherapy/ OT Assistants	**1**
Other Allied Health Care Professionals	**2**
Exercise/ dance instructors	**5**
Sports coaches	**3**
Community/Social Workers	**2**
Volunteers	**4**
Other	0
None	0
Don't know	0

Characteristics of strategies' target populations

The following figure and tables provide information about the target populations, including the upper and lower age limits, the 'category' in which they fit, cultural differences, and the level of functional mobility (by 'categories').

The mean (SD) lower and upper age limits were 52,14 (7,49) and 90,71 (9,42) respectively, and the maximum and minimum intended for every promotion strategies are described in figure 2. As presented in table 59, some promotion strategies spot more than one 'category' of participants as the target group. In order to check if the promotion strategy caters for cultural differences, respondents were asked to indicate, if applicable (PSQ23) which specific aspects were consider (PSQ24) (Table 60). However, only 4 answers were analysed. With respect to the level of functional mobility, it must be noted that none of the promotion strategies aimed to include the lowest 'category' and on the other hand, the majority of promotion strategies are designed for an intermediate level of functional mobility (older people that walks outdoors with/without walking aids and no assistance or supervision by another person) (table 61).

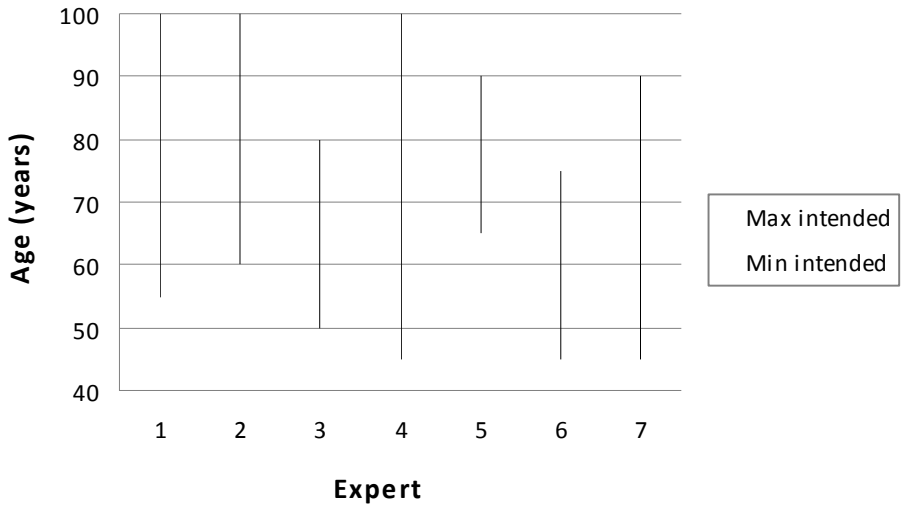

Figure 2 *- PA Promotion Strategy Directors' estimates of the upper and lower age limits of those for whom their strategy is intended (PSQ21).*

Table 59 *- PA Promotion Strategy Directors' responses concerning the 'category' of participants targeted by their promotion strategy (PSQ22).*

	Number
General population (including older adults)	**2**
All older adults	**4**
Community – dwelling older adults	**2**
Institution – dwelling older adults	**1**
Older adults with chronic conditions	**1**
Ethnic minority older adults	0
Other	0

Table 60 *- PA Promotion Strategy Directors' responses when asked which specific cultural differences were catered for in their promotion strategy (PSQ23 and 24).*

	Number
None	**3**

Different language	0
Different cultural perceptions	**2**
Different education levels	**3**
Different income levels	**3**
Other	0
Don't know	0

Table 61 *- PA Promotion Strategy Directors' responses concerning the 'category' of individual (by level of functional mobility) their promotion strategy aimed to include (PSQ25).*

	Number
Frequently walks vigorously or runs	**1**
Walks outdoors with no walking aids and no assistance or supervision by another person	**5**
Walks outdoors with a walking aid but no assistance or supervision by another person	**3**
Walks outdoors only with assistance or supervision by another person	**1**
Never walks outdoors	0

Design of promotion strategies

On the attempt to investigate the promotion strategy design, different domains were consider, such as the approaches used to encourage behaviour change in relation to physical activity (table 62), as well information about the previous target population screen and whether the promotion strategy was designed to surmount barriers to physical activity (table 63). On respect to the last topic, additional information regarding to which particular barriers the promotion strategy was designed to surmount can be found in table 64. Judging from this table, only 2 particular barriers were not considered: acute exacerbation of chronic conditions and environmental barriers.

Table 62 *- Promotion Strategy Directors' responses concerning approaches used in their strategy to encourage behaviour change in relation to physical activity (PSQ 28).*

	Number
Improved knowledge	**6**
Improved access	**1**
Improved safety	**4**
Improved time management skills	0
Improved motivation	**5**
Fear reduction	**1**
Improved skill	**7**
Reduction in misconceptions about ageing	**4**
Don't know	0

Table 63 *- PA Promotion Strategy Directors' responses concerning whether (1) the target population was screened for their readiness for behaviour change prior to implementing the promotion strategy (PSQ 29) and whether (2) their promotion strategy was designed to surmount barriers to physical activity (PSQ 30).*

	(1)	(2)
Yes	**2**	**5**
No	**5**	**2**
Don't know	0	0
Total	7	7

***Table 64**- PA Promotion Strategy Directors' responses concerning which particular barriers to physical activity was their promotion strategy designed to surmount (PSQ31).*

	Number
Perceived poor health	**1**
Symptoms associated with chronic conditions	**2**
Fear of injury	**1**
Acute exacerbation of chronic conditions	0
Lack of skill	**4**
Lack of time	**2**
Lack of energy / motivation	**2**
Environmental barriers	0
Misconceptions about ageing	**2**
Other	0
Don't know	0
Not applicable	**1**

Another related point is that different approaches may well be used by the PA promotion strategy but not all of those may be found effective in achieving the aims of their PA promotion strategy. The descriptive data are presented in table 65. On the subject of Environmental and policy approaches, 'enhanced access to physical activity' was the only one mark as used/ found effective.

***Table 65** - PA Promotion Strategy Directors' responses concerning which approaches were used by their PA promotion strategy (PSQ32) and which approaches they had found effective in achieving the aims of their physical activity promotion strategy (PSQ33).*

		Approaches used	Approaches found effective
Information approaches	Community wide campaigns	**5**	**3**
	Group-based health education focused on information provision	**3**	**4**
	Mass media campaigns	**3**	**3**
	Point of decision prompts	**3**	**3**
	Other	0	0
Behavioural and social approaches	Individually-adapted behaviour change	**2**	**3**
	Education with TV/video/DVD	0	0
	Family-based social support	**1**	**2**
	Health professionals social support	**3**	**1**
	Non–family social support	**5**	**3**

	Other	0	0
Environmental and policy approaches	Enhanced access to physical activity	**6**	**4**
	Outreach activities	0	0
	Transportation policy	0	0
	Infrastructure changes to promote non–motorised transit	0	0
	Urban planning approaches	0	0
	Other	0	0
Don't know		0	0

The final topic, related with the promotion strategy design, is the nature and methods use to transmit the messages to the target population. Some promotion strategies used multiple forms of messages, as shown in table 66. Similarly, different methods were use by the same promotion strategy attempting to reach the target population, in the most successful manner (table 67).

Table 66 *- PA Promotion Strategy Directors' responses concerning the nature of the message(s) used in their promotion strategy (PSQ 34).*

	Number
General message	**5**
General advice	**4**
General warning	**1**
Specific advice	**4**
Specific warning	**1**
Other *(physical activity pyramid)*	**1**
Don't know	0

Table 67 *- PA Promotion Directors' responses concerning how the message(s) used in their promotion strategy was / were conveyed to the target population (PSQ 35).*

	Number
Media	**3**
Post	**2**
Internet / e-mail	**4**
Intermediates, healthcare professionals	**5**
Models / opinion	**1**
Events (e.g. Falls Awareness Day)	**3**
Other *(e.g. Churches, friends, social institutes and community centres)*	**4**
Don't know	0

Evaluation and sustainability of effect of promotion strategies

In gathering the data on which the results are based, we were also greatly concerned with the evaluation of promotion strategies. Thus, evaluation refers to different aspects of the overall PA

promotion strategy. We consider 3 basic topics: target population reached, main settings evaluated, and tools used to maintain behaviour change.

As presented in table 68, only 4 PA Promotion Strategy Directors gave estimations concerning the proportion of the target population that has been reached by their promotion strategy, and most of those promotion strategies just accomplish the 25% plateau.

Of the 3 promotion strategy directors who had confirmed a prior evaluation of their promotion strategies (PSQ36), only 2 identify which aspects of their promotion strategy had been evaluated since it was implemented (table 69).

Finally, PA Promotion Strategy Directors' responses concerning the tools used in their promotion strategy to maintain behaviour change are shown in table 70. Thus, several promotion strategies used multiple tools, however, results must be interpreted with caution because only 4 promotion strategies are been consider (two promotion strategies doesn't have a specific plan or device to maintain the behaviour change achieved and one is a 'missing data').

Table 68 *- PA Promotion Strategy Directors' estimates of the proportion of the target population has been reached by their promotion strategy since it has been running (PSQ27).*

	Number
0%	0
25%	**3**
50%	0
75%	**1**
100%	0
Don't know	**3**
Total	7

Table 69 *- PA Promotion Strategy Directors' responses concerning which aspects of their promotion strategy had been evaluated since it was implemented (PSQ37).*

	Number
Behaviour change	0
Population reached	**1**
Cost effectiveness (e.g. total costs)	**1**
Other: *number of activities, participant's typology*	**1**
Don't know	**1**
Not applicable	**4**

Table 70 *- PA Promotion Strategy Directors' responses concerning the tools used in their promotion strategy to maintain behaviour change (PSQ39).*

	Number
Printed material posted	**1**
Telephone	**1**
Positive reinforcement / feedback rewards	**1**

Financial incentives	0
Social support	**2**
Buddy groups	**2**
Opportunities to socialise	**3**
Promotion days	0
Other: *Attendance quality*	**1**
Don't know	0
Not applicable	**3**

Finance

Our last step is to examine the data collected about finances.

Only 2 directors gave an estimation of the total cost (per year) of developing and running their promotion strategy (PSQ40). The importance estimate was 250€ in one case and 1000000€. This, however, may be partly due to the fact that both promotion strategies are fully different, mostly because the more expensive promotion strategy is delivered on national level.

In general, individual promotion strategies are each funded from only some sources (Table 71), plus 3 promotion strategies have just one source of funding to run their promotion strategy. Following are listed the sources of financial support point out on the National/ Regional Government setting: Foundation to Science and technology, Polytechnic Institute of Bragança, SNRIPD and Faculty of Human Motricity.

Table 71 *- PA Promotion Strategy Directors' responses concerning the source of the funding to run their promotion strategy (PSQ41).*

		Number
National/ Regional Government	Health budget	0
	Social care budget	0
	Leisure / sport budget	**2**
	Other	**3**
City/ Local Government	Health budget	**1**
	Social care budget	**1**
	Leisure / sport budget	**3**
	Other	0
Other Sources	Lottery	0
	Charity	0
	Other (Eugénio de Almeida Foundation)	**1**

Systematic Search for Evidence Based Guidelines

Methods

Definitions

Physical activity (PA) – Any bodily movement that is produced by the contraction of skeletal muscle and that substantially increases energy expenditure *e.g.* running, walking, swimming, lifting or carrying a heavy weight.

PA promotion strategy – An intervention, device or plan which it is intended will increase the PA of a community.

e.g. Improved street lighting or an educational TV advertising campaign.

Older person - In this systematic search the older person was defined as being 60 years and over, in good health or suffering from a medical condition.

Criteria for inclusion in inventory of guidelines

The publications to be included in the inventory were those which we considered to be guidelines, position stands, consensus statements, standards or recommendations from a credible source, that addressed exercise and/ or physical activity for older people and which satisfied all five of the following criteria.

- composed by a process involving a consensus of experts, and
- published under the auspices of government departments, international health organisations, age-related NGOs, or learned societies, and
- with sufficient information about the evidence on which they are based to allow the individual recommendations to be graded according to the strength of that evidence (see 'Key to evidence statements and grades of recommendation', as published in the most recent SIGN guideline, viz. SIGN Guideline No. 98, July 2007), and
- published from 1990 onwards, and
- addresses the delivery and/or promotion of physical activity for the older person (including old age specific sub-sections of guidelines for the role of physical activity for adults of all ages in health and/or disease).

Search to identify candidate publications for inclusion in the inventory of guidelines

The search protocol took account of the fact that the guidelines which we sought might have been published in scientific journals, websites, or as free-standing publications.

We searched the following electronic databases: Ovid Medline (1950 to June Wk 4 2007); CINHL (1982 to June Wk 5 2007); EMBASE (1996 to 2007 Wk 26); SPORTDiscus (1830 to May 2007); AARP Ageline (1978 to June 2007); Cochrane Review Library; NHS Scotland library.

Searches included no language restrictions and were limited to older adults.

The following two search strategies were used for Ovid Medline and adapted for the other databases.

Search 1 – Provision of physical activity for older people

1 exp exercise$/

2 (exercise$ or physical activity or exercise prescription).mp

3 1 or 2

4 exp aged/ or exp "aged, 80 and over"/

5 (aged or elderly or senior$ or older adult or older person$ or older people).mp

6 4 or 5

7 guideline.pt

8 practice guideline.pt

9 exp guidelines/

10 exp health planning guidelines/

11 7 or 8 or 9 or 10

12 exp consensus/

13 (guideline$ or consensus or position stand or standard$ or recommendations$).ti

14 11 or 12 or 13

15 3 and 6 and 14

Search 2 – Promotion of physical activity for older people

1 exp exercise$/

2 (exercise$ or physical activity).mp

3 1 or 2

4 exp health promotion$/

5 (health promotion$ or promotion strategy or promotion strategies or health behaviour$ or campaign$).mp

6 4 or 5

7 exp aged/ or exp “aged, 80 and over"/

8 (aged or elderly or senior$ or older person$ or older people or older adult$).mp

9 7 or 8

10 guideline.pt.

11 practice guideline.pt

12 exp guidelines/ (61574)

13 exp health planning guidelines/

14 exp consensus/

15 (guideline$ or consensus or position stand or recommendation$ or standard$).ti

16 10 or 11 or 12 or 13 or 14 or 15

17 3 and 6 and 9 and 16

The following websites were chosen on our judgement and searched for relevant guidelines, position stands, consensus statements, standards or recommendations. Search terms were adapted from the two Ovid Medline searches outlined above.

WHO (World Health Organisation)

NIH (National Institute of Health)

NIA (National Institute of Ageing)

CDC (Centre for Disease Control)

ACSM (American College of Sports Medicine)

AHA (American Heart Association)

NICE (National Institute for Health and Clinical Excellence)

Scrutiny to select publications for inclusion in the inventory of guidelines

Two reviewers (FS, AY) independently scanned the titles of candidate publications identified by the searches to identify potentially relevant publications for more detailed review. Searches of bibliographies and texts were also conducted to identify additional relevant publications. Non-

concordance of reviewers was resolved by discussion. The abstract was obtained for each title selected.

The abstracts were then independently studied by the two reviewers, to identify publications for full review. Non-concordance was resolved by discussion. From the full text, the reviewers independently identified the publications which met all five criteria for inclusion in the inventory. Once again, non-concordance was resolved by discussion.

Results

Approximately 5120 titles were considered. Of these, over 650 abstracts were reviewed and, from them, 325 full publications were reviewed. Fifty-five publications met all 5 criteria for inclusion in the inventory, where they have been listed under the following subheadings: habitual physical activity and PA promotion, resistance training, exercise referral, cardiovascular conditions, exercise testing and screening, hypertension, stroke, hypercholesterolemia, diabetes, obesity, osteoporosis, falls, osteoarthritis and chronic pain.

Concordance of Programmes with Guidelines

Discussion

The appropriate programme is highly dependent on each participant's status as well as on the overall aims of the programme. In general, the recommendations reported by recently updated guidelines are related to physical activity (health-enhancing physical activity) and/or specific to several diseases such as those related to cardiovascular system, osteoporosis, and diabetes. However, the present summary of the most 'successful' PA programmes in Portugal concerns an overall programme that could integrate several different activities and PA opportunities for older people, with specific characteristics as following: components, mode, exercise types, intensity, frequency, duration, or categories of participants. From this standpoint, the majority of the answers to several questionnaire items might not reflect any specific type of training/activity.

With the current knowledge, it is difficult to examine in detail all the information gathered through the PA Programme Questionnaire. Because some of the summarized information is purely descriptive, it will not be used as key points for discussion. On the other hand, data are lacking regarding some important issues; for example, exercise intensity, detraining periods, facilities' environment, and the inclusion of flexibility and/or balance activities in the formal workout period of the exercise session.

Although intensity and duration of training are interrelated, the questionnaire did not include any question regarding the intensity that the programme emphasizes, especially on the workout component of a session. Additionally, the rating of perceived exertion (RPE) is an important parameter for measuring exercise intensity and may influence adherence to an exercise program; but due to the lack of information in this field we cannot discuss this relationship, although we have information about the proportion of participants' attendance.

Information about maintenance of training (knowing the length of detraining period) would be significant as to maintain the training effects, exercise must be continued on a regular basis. Similarly, information about facilities' environment should be consider because musculoskeletal injury is the most common risk of physical activity in adults, while the protective equipment and well-designed environments protect against injury [1].

Despite the absence of information regarding the flexibility activities in this survey, it is well establish that these activities should be performed a minimum of 2 $d.wk^{-1}$, and they may be done as a session alone or be included in the cool-down portion of strength or endurance program [2]. In addition, static, ballistic and/or modified proprioceptive neuromuscular facilitation (PNF) techniques should be included, according to American College of Sports Medicine (ACSM) recommendation [3]. At the same time, balance training is also suggested to be incorporated, either as part of strength/endurance training or as a separate modality and should deal with three

major concerns: reduction of the base of support, disturb of centre of gravity and reduction of other sensory input (vision) [4].

Using the publications collected in the inventory previously described, we decided to use the following topics in an attempt to relate and integrate the results into some theoretical model (guidelines):

- Components of overall programmes
- Characteristics of programmes' classes
- Overall aims of overall programmes
- Pre-participation assessment
- Programme content
- Client safety

Apparently all these topics characterize the general principles that, based on available evidence, should guide the design of PA programmes and the prescription of exercise to older patients.

Concerning the components included in overall programmes, information about the medical condition-specific which is included is particularly relevant and has other consequences. Evidence for the proper management of diabetes, hypertension, stroke, osteoporosis, falls, osteoarthritis, chronic pain, and cardiovascular conditions in general population and older adults is well established as well as recommendations for physical activity in this population [5-11]. Our results indicate that only the medical condition arthritis and osteoporosis are included on some overall programmes. Another relevant component are falls prevention programmes, also currently available for Portuguese older adults. Nevertheless, the benefits deriving from PA programmes, and the most appropriate modalities for delivering those specific 'treatments' are well establish.

It is known that regular exercise may improve osteoarthritis (OA) patient's quality of life and preserve functional independence [12]. Thus, an exercise program should be developed to alleviate pain and improve overall physical fitness. Research on this topic confirms that both, aerobic exercise and strength training programs, effectively improve several functional parameters.

The American Geriatrics Society (AGS) [12] reinforces the requirement of patients' assessment, as the first step in designing a PA programme individualized for the patient with OA, and the assessment should include a search for arthritis-related factors, impairments associated with inactivity, and any health problems that could be exacerbated by exercise. In addiction, the need for a physician-supervised exercise stress test remains controversial [12].

The basic components of an arthritis programme are similar to any physical activity programme and should address flexibility, strength, and endurance. The exercise prescription should take into account the common training parameters: exercise intensity, volume, frequency and progression. Data from AGS [12] also revealed recommendations about the exercise session content, which

should have three phases: a 5 to 10 minutes warm-up period, a training period, and a 5 minutes cool-down period. Our results points out that the overall PA programmes are in line with the general guidelines for exercise training with OA patients.

Regular exercise has been proposed to be a method that prevents simultaneously osteoporosis and falls and consequently fall-related fractures in older adults [13,14]. The recently updated guidelines of the ACSM position statement [14] reports that exercise programs for elderly women and men should include weight-bearing endurance (performed 3-5 times per week) and resistance activities (performed 2-3 times per week) aimed to preserve bone mass. Additional information is report about the exercise intensity (moderate to high) and exercise duration (30-60 minutes per day). Unfortunately, there are some delimitations to consider when our results are compared with guidelines. For example, it is impossible to define the mode and/or modalities offered specially for the osteoporosis programme, since experts selected all the possible options (see table 33) for their overall programme. Another not emphasized, although important issue, was the exercise intensity as previously discussed. Nevertheless, the exercise duration is well-matched with the ACSM position stand [14].

The ACSM [14] also underscore the importance of an exercise program for elderly adults designed to improve balance and prevent falls. Literature suggests that low levels of muscular strength are related with increased falls propensity and fall-related fractures, due to bone demineralization associated with age [15]. As a result, falling is the strongest single risk factor for a fracture in an older adult [16].

Although physical activity is associated with several health benefits, the AGS Panel on falls prevention [17] was unable to determine the optimal type, duration and intensity of exercise programme to recommend. However, data from the Panel emphasize the effectiveness of balance activities to reduce falls, when compared with resistance and aerobic training [17].

Despite the presence of Tai Chi as one of the many modalities of physical activity offered by PA programmes, it is impossible to ensure that this type of balance training aimed to reduce and/or prevent falls.

The ratio of instructors to participants gives an overview of the characteristics of programmes' classes. There is minimal evidence about this issue. In fact, we only found one publication, a guideline for cardiac rehabilitation [18], which emphasized that during exercise classes the ratio of patients to trained staff should be no more than 10:1. Additionally, they recommended the requirement of staff with basic life support training and the ability to use a defibrillator, for group exercise of low to moderate risk patients. More recently, McVeigh et al. [19] also recommended that all staff should be trained in basic life support procedures and regularly updated protocols for the management of medical emergencies must be available, and equipment must be maintained on a regular basis.

According to the fact that none of Portuguese PA programmes offers adapted exercise for cardio rehab (see table 33) we might assume that participants included have a low risk of CAD. However,

and in contrast to the prescribed guideline, the ratio of participants to instructors is higher (11-25:1) during some exercise sessions, and most of the programmes have not specific emergency and equipment protocols. Fortunately, when the required protocols are assumed, staffs are trained once a year.

The most important overall aims of PA programmes are clearly in concordance with guidelines. Thus, improved physical function, health promotion, opportunities to socialise and disease prevention has been largely confirmed as benefits associated with regular participation in PA programmes, and are important topics to consider when recruiting participants.

The usual record of objective measures is the key to control the outcomes from an exercise program. The nature of the PA programme dictates the measures of interest to be assessed. In the presence of tests results, the instructors will know how much change has occurred and the effectiveness of the prescribed exercise training.

Accurate exercise testing and screening guidelines are described for patients with cardiovascular conditions, but the extent of pre-activity evaluation depends on the intensity of anticipated physical activity and on the person's comorbidities. Specifically, for initial diagnosis of Chronic Heart Failure (CHF) a careful physical examination should identify the potential causes or aggravating factors, and constantly evaluate the disease status [6]. On the other hand, clinical risk stratification should be used for patients with stable cardiac disease, which is sufficient for low to moderate risk patients undergoing low to moderate intensity exercise [18]. For high risk patients and/or high intensity exercise training exercise testing and echocardiography are recommended [18]. Additionally, the 6-minute walk test may be reasonable to provide an objective assessment of the functional limitation of claudication and response to therapy in elderly individuals or other not amenable to treadmill testing [20].

Concerning to the pre-participation assessment of potential clients, the ACSM recommends symptom-limited exercise testing before vigorous exercise (>60%$VO2_{max}$) is undertaken by men ≥45 yr and women ≥55 yr [21]. A report in 2003 from the American Heart Association (AHA) indicated that exercise testing is not necessary for all people beginning a moderate intensity physical activity program [1]. Moreover it seems impractical to use exercise testing to prevent serious cardiovascular events in all asymptomatic persons who exercise, especially during activities of moderate intensity. Thus, medical testing is not required for resistance training, which should always be initiated at a low level [5].

Although there is controversy regarding the utility of medical screening procedures such as exercise testing, the PA programme questionnaire did not enquiry if the health screening tool include an exercise testing and what were the inclusion criteria used in deciding which patients should undergo the exercise testing.

Moreover, while ACSM and AHA have published a joint position statement that provides recommendations for cardiovascular screening of all persons before participation in activities at health/fitness facilities [22], emphasizing that should be conducted a cardiovascular screening of all new users, Portuguese PA programmes do not use this type of facilities.

The components of physical fitness which PA programmes aims to improve are in accordance with a significant body of evidence based guidelines [3,4,21,23,24] that describe a extensively list of benefits associated with regular participation in physical activity, which include a variety of health issues as the following examples: cardiovascular health, body composition, metabolism, bone health, psychological well-being and muscle weakness and functional capacity, and much more aspects of physical fitness are listed as well (for more detail see [21]).

In general, results concerning the modalities offered in PA programmes indicate three major areas of interest: aquatics and walking (endurance activities), machine-based equipment (strength activities) and adapted exercise (special populations). The updated ACSM/AHA recommendation for older adults provide guidance about appropriate types (include aerobic activity, muscle-strengthening activity, flexibility activity, and balance exercises) and amounts (frequency, intensity, duration, number of exercises and sets and repetitions) of physical activity that promote health and prevent disease [25]. The recommendation applies to all adults aged 65+ years, and to adults aged 50-64 with clinically significant chronic conditions or functional limitations that affect movement ability, fitness, or physical activity. According to the key components of a physical activity program presented by a coalition of national organizations led by the ACSM [21] a well-rounded physical activity program should include endurance, strength, balance, and flexibility exercises, mainly to endorse general health and well being.

As previously mentioned, the information gathered about the programme content is vague and although the key component are present in PA programmes, data are lacking about the amounts of exercise performed specifically on which activities. Moreover, the number of exercises and sets are recommended for health subjects [3] but also for patients with chronic conditions such as stroke [26], diabetes [9,10], CVD [5], osteoarthritis [12], although this information was not included in the survey.

Considering the inclusion of warm-up and cool-down activities, both with an usual length of 6-10 minutes, all PA programmes are in agreement with the ACSM [3] recommendations. Unfortunately, the period of time that both phases should be conducted is not described.

The proposal of progression is particularly clear in resistance training recommendations, and it is also recognized that resistance training should be individualized and provide a stimulus to all the major muscle groups [3,13,21]. In addiction, Villareal et al. 2005 [11] argued that an exercise programme for older adults should be started gradually and must be individually determined with consideration of diseases and disability. It is well known that as the individual progresses, the exercise dosage can be increased (overload) to facilitate improvements in muscular strength and endurance. Overload can be achieved by modulating several prescriptive variables: increasing the

resistance or weight, increasing the repetitions per set, increasing the number of sets per exercise, and decreasing the rest period between sets or exercises [5].

In fact, exercise should start at a low-to moderate intensity, duration, and frequency and gradually progress over the course of several weeks or months to longer, more frequent, and more vigorous efforts, in order to avoid musculoskeletal injuries and promote participants adherence [11].

Concordance of Promotion Strategies with Guidelines

Discussion

Among the publications analysing the strategies to promote Physical Activity, limited information is reported regarding specific strategies to promote the adherence to PA programmes, although the majority of Portuguese 'successful' promotion strategies are designed with this purpose.

The aim of this section is to compare the results with the related guidelines. However, not all the information gathered through the promotion strategy questionnaire will be considered. In fact, only valuable topics which are more suitable to be related with theories, concepts, and previous research findings are included. The analysis addresses the following issues:

- Description of promotion strategies
- Characteristics of strategies target populations
- Design of promotion strategies
- Evaluation and sustainability of effect of promotion strategies

The decision to include or exclude some settings for PA involvement depends on several considerations, such as whether the setting is closely related to participants' 'category', interests and needs and how likely they will enhance adherence. Currently, the ACSM [21] recognizes that group-based physical activity are well designed to recent PA program participants, providing several advantages (e.g., enhanced adherence through social intervention with others and mutual commitment to physical activity among friends, opportunities for instruction in proper technique, and qualified supervision). In this regard, group-exercise settings are encouraged by the majority of the promotion strategies.

Recently, the World Health Organization (WHO) developed a concise overview of the best available evidence on physical activity in the urban environment. Based on this report [27] the health care systems have a key role in addressing physical activity, as well as other healthful behaviors such as obesity and diet. In fact, community health centres, hospitals and long-term care facilities should create and improve opportunities for participation in physical activity. When considering the settings taking part in Portuguese promotion strategies, health care settings are integrated in most of the promotion strategies, a helpful approach as emphasized before. In order to guarantee best practice, the WHO [27] suggests that local governments should collaborate with and encourage health and long-term care facilities to increase opportunities for active living and appropriate physical activity.

Because theories and models of human behavior can guide the development and refinement of promotion strategy, we will briefly define those theories and models that have been used for designing interventions.

The health belief model stipulates that a person's health-related behavior depends on the person's perception of four critical areas: the severity of a potential illness, the person's susceptibility to that illness, the benefits of taking a preventive action, and the barriers to taking that action [28].

In the transtheoretical model, behavior change has been conceptualized as a five-stage process or continuum related to a person's readiness to change: precontemplation, contemplation, preparation, action, and maintenance [29].

The theory of reasoned action states that individual performance of a given behavior is primarily determined by a person's intention to perform that behavior. This intention is determined by two major factors: the person's attitude toward the behavior and the influence of the person's social environment or subjective norm [30].

The theory of planned behavior adds to the theory of reasoned action the concept of perceived control over the opportunities, resources, and skills necessary to perform a behavior [31].

The ASE-model [32] assumes that behaviour has three primary determinants: attitudes, social influences and self-efficacy. Together, they determine the intention of a person to perform a specific behaviour, but they are not entirely independent of each other.

However, taken together, those theories and models do not address the influence of the environment on health behavior [33].

Finally, the inclusion of partnerships with intermediaries to reach the target population is supported by several evidence-based PA promotion strategies. In this regard, important suggestions for policy and practice based on available evidence are presented by the WHO report [27], which included partnerships between local governments and community agencies, voluntary organizations, religious organizations and sport clubs to promote and enable active living. Moreover, it has been proposed that local governments should encourage health professionals in primary care settings (such as nurses, paediatricians and physical therapists) to promote active lifestyle including motivate inactive people.

Note that health professionals who work in these sites are key elements to disseminate the value and benefits of regular physical activity. Primary care practitioners may be ideally placed to provide brief interventions that motivate people to increase physical activity [27]. The recent update of the ACSM/ AHA [24] assumed that all healthcare professionals should extend their advice to patients beyond the traditional perspective program based on medical clearance and supervision by initially encouraging them to accumulate moderate-intensity physical activity. Nonetheless, the extent to which physicians counsel their patients to be physically active is unclear, mainly because many providers do not believe that physical activity is an important topic to discuss with their patients, and many lack effective counseling skills [33].

Older people are heterogeneous and diverse and have unstable levels of independence and mobility. Therefore PA promotion strategies leaders should work closely with individuals to design a strategy that reflects the person's preferences and capabilities. From our results concerning the 'category' of participants targeted by Portuguese promotion strategies it is perceptible that racial or ethnic minority older adults who may face barriers such as language, transportation, income, education, or disability are not included. One possible explanation is that design promotion strategies to surmount all those barriers would be required to promote physical activity or to improve adherence with physical activity recommendations. In fact, the review of adult intervention research literature provides limited evidence that interventions to promote physical activity can be effective in a variety of settings using a variety of strategies, and perhaps multiple interventions conducted over time may need to be employed to sustain physical activity behavior [33].

Taking into account that older adults with chronic conditions are also a represented 'category' of participants, the strategies designed to promote recruitment of older individuals into cardiac rehabilitation programs should focus on specific issues [34]. The needed restructuration can be achieved both by spreading the results of beneficial effects of cardiac rehabilitation in advanced age and by precisely identifying the goals, as well as by defining assessment, rehabilitation and follow-up protocols targeting the peculiar characteristics of old and very old patients [34].

One important area of inquiry is to identify the design of promotion strategies successfully implemented in Portugal. Although regular physical activity is an important behaviour for individual and population health, the process of encouragement behaviour change involves a multitude of complex variables, including personal, programmatic, social, environmental and related factors. Additionally, it has been proposed that several individual determinants influence participation in physical activity including sex, age, skill level, ability and disability, beliefs, attitudes and motivation [27]. To achieve long-term changes in heath-related behaviors, these and medical factors must be addressed collectively [35]. According to these ideas, Portuguese promotion strategies apply multiple approaches to encourage behaviour change in relation to physical activity.

It is known that aging is associated with a loss of perceived control. However, it is reasonable assumed that people are more likely to initiate and maintain physical activity if they feel confident about their ability to succeed [21]. This knowledge supports the usefulness of the most used approach in Portuguese promotion strategies. In addition, concerns for safety have been identified as a barrier to exercise by many older adults [21]. Fortunately, Portuguese promotion strategies' approaches are designed to alleviate inappropriate concerns about safety by educating participants about actual risks of PA (fear reduction), and by improving knowledge (e.g., helping individuals understand how to self-monitor their exercise intensity levels).

While a substantial body of scientific evidence indicates remarkable health benefits are associated with regular participation in physical activity, it is now established being necessary to previously

identify and examine which are the key barriers that prevent older adults from making the transition from sedentary to physically active, and afterwards surmount those barriers to physical activity [36].

As examples, Edwards and Tsouros [27] consider that key barriers for older people include accessibility (for example, compromised mobility may limit the ability to use stairs in undergrounds); safety issues related to weather (such as icy sidewalks) and road traffic (such as unsafe street crossings); ageism (a belief that physical activity and sports are only for the young) and isolation (such as lack of support from others, including health professionals and recreation specialists). Perceived lack of time, lack of motivation and concerns about security are also meaningful barriers and should be address [27]. Although there is agreement that environmental barriers are crucial to enable and encourage physical activity participation among this population group, Portuguese promotion strategies are not designed to surmount those barriers.

Taking into account that to achieve the promotion strategy aims, it is crucial to include the most effective approaches, our results demonstrate that information and behavioural/ social approaches were used and found useful. Note that, if the approach used has not well served the promotion strategy, then certainly those approaches need to be carefully assessed (strengths and weakness).

In general, it has been proposed that simply disseminating information about the health benefits of being physically active does not appear to be sufficient in terms of increasing participation among older adults [37]. However, different types of information approaches were used by Portuguese promotion strategies and apparently they were effective.

There is growing evidence that behavioural and social approaches, including those derived from individual-adapted behavior change and social support, have been used with mixed success in numerous intervention studies designed to increase physical activity [33].

It is assumed that people are more likely to be active when they have social support and encouragement of family, friends, co-workers and others [37]. In fact, just as suggested family-based, health professional and non-family social support were all considered effective in achieving the aims of promotion strategies. On the other hand, results of community-based interventions to increase physical activity have been generally disappointing. The presence of active community coalitions, widespread community involvement, and well-organized community efforts appear to be important, however, in increasing physical activity levels [33]. On this regard, Portuguese promotions strategies directors have the opposite opinion, because when compared with the number of promotion strategies that used the community wide campaigns approach, the number of directors which found the approach effective is smaller.

Enhance access to physical activity was the mostly selected approach, regarding environmental and policy ‘category’, and was also found effective, although in a minor degree. Thus, the report of the Surgeon General [33] points out that ensuring the availability and accessibility of environments and facilities conducive to exercise is central to see that the public has the opportunity to obtain regular physical activity.

Because there is no evidence that indicates which type (nature) of message is more effective to enhance physical activity participation among older adults, we can only speculate about the content of the messages used. Thus, it is recommended that to promote and maintain health, all healthy older adults need to engage in moderate-intensity aerobic physical activity for a minimum of 30 minutes per day (range of 30-60 min) [24,25]. Such guidelines (recommended amount of activity) should be assumed as key points to the promotion strategy, in other words, moderate activity should be encouraged and give less emphasis to attaining high levels of activity. In 2002, the AHA [38] stated that recommendations to enhance physical activity participation in elderly should include a broader interpretation of exercise programming, which could combine besides the structures exercise, consideration of differences in needs between women and men, occupational and leisure activities and simple tasks of daily living, the importance of socialization and diversity of exercise activities [38].

Additionally, it has been proposed that communications strategies have had limited impact. It is not clear if communicational approaches would be more effective in getting people to be regularly active if they were linked with opportunities to act on messages or if messages were tailored to stages of change or to the needs of subgroups in the population [33]. In fact, Portuguese promotion strategies make use mostly of intermediates, healthcare professionals to convey the message to the target population. However, it is reasonable to stand that communications strategies, both electronic and print, have the potential to successfully reach individuals and communities.

Finally, the following paragraphs briefly examine the tools that can be applied to maintain behaviour change. Note that only 4 promotion strategies include a specific plan or device to maintain the behaviour change achieved, and none of them used financial incentives or promotion days, to accomplish the aim. In fact, evidence of the effectiveness of techniques like selfmonitoring, frequent follow-up telephone calls, and incentives appear to be effective over the short run, but not over longer intervals [33].

Social support from family and friends has been consistently and positively related to long-term exercise adherence in older adults [39]. Examples of social support strategies include peer support (e.g., tell a friend and bring a friend, exercise buddy system) and professional health educator support (telephone counselling, mail follow-up) [21].

Because being conscious of meaningful positive changes in performance and success in achieving expected outcomes are associated with exercise adherence in older adults, it as been suggested that performance feedback should be used [21]. Similarly, the ACSM [21] also suggests the positive reinforcement since it increases the likelihood of maintenance of the activity; examples of effective reinforcement strategies in PA settings include recruitment incentives, rewards for reaching targeted goal, and public recognition for attendance and adherence.

As a last note, the United States Department of Health and Human Services suggests that policies and programs should be periodically evaluated to learn how they can be improved to promote physical activity [33] however, the aspects that should be assess were not discuss.

Conclusions & Recommendations

This report gives an overview of the most successful PA programmes and PA promotion strategies in Portugal. In general, it appears clear that Portuguese PA programmes were designed in concordance with guidelines. Perhaps the most determinant factors had been considered, such as small group sizes, a satisfactory ratio of instructors/ participants, possible frequency of exercise training, adjustment of the programme according to participant's aims, objective measures recorded at regular intervals, requirement of a health screening tool, inclusion of the most important physical fitness components, inclusion of different types of modalities, and inclusion of warm-up, cool-down and progression. However, it seems that the analysed programmes did not focus on some other important key points, such as: most of the screening tools are not international recognized, there is a clear lack on emergency and equipment protocols and some programmes do not adapt exercise to individuals with chronic medical problems. Additionally, PA programmes are mostly designed for a restricted category of participants, including community-dwelling older adults, participants with a good level of functional mobility and mostly older women.

Although the questionnaire aimed to cover the most relevant fields on different issues related with PA programmes, we consider that it would be also useful that some answers would reflect only a specific type of training/activity. In fact, only this way it would be possible to discuss the adjustment of those training/PA programmes. For example, does the programme specifically design to special populations? What was the screening tool used? Concerning to one type of activity (endurance exercise), what was the exercise duration, frequency and intensity? For medical condition-specific programmes, is any explicit qualification required for instructors?

Most importantly, the survey shows that there is an apparent similarity between 'successful' PA programmes, and that Portuguese PA programmes can and should be improved in order to best integrate the overall guidelines, briefly identify on this report.

Similarly, it appears that Portuguese promotion strategies were properly designed. When compared with available evidence, the results demonstrated that promotion strategies covered the essential fields, which are closely related with success. Thus, the analysed promotion strategies focus on promoting physical activity in different settings (such as social institutions, health care settings, and workplaces), on establish partnership-based strategies, on enabling and encouraging increased physical activity among the general population and subgroups, such as community-dwelling and institution-dwelling older adults, and older adults with chronic conditions, on using useful approaches and tools and on surmount some of the most important barriers to physical activity.

However, many questions remain about how best to promote physical activity, probably because few studies tested the effects of promotion strategies initiatives.

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Appendix two – Identification details of 'Successful' PA Programmes

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