## 141 - BUILDING EVOLUTION OF AN EVALUATION INSTRUMENT OF THE PHYSICAL ACTIVITY LEVEL FOR OLD PEOPLE - CURITIBATIVA

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#### INTRODUTION

The population of Curitiba, like any other great urban center, has been getting old vertiginously, being in the need of programs and actions that give attention to that demand. According Matsudo & Matsudo & Barros Neto (2001) is practically an agreement between health professionals that physical activity is a determining factor in the progression of the ageing process. The World Health Organization (1996), the American College of Sports Medicine (1999), on their official documents, justify the importance of physical activity for the elderly. According to the National Center for Health Statistics, an estimated 84% of people over 65 years old are dependent to realize their own daily activities (SBME, 1999). This dependency makes the elderly more susceptible to diseases related to the aging process (SVS, 2007), raising the health costs that, beyond the economic impact, produce social repercussion. To Mazo et al (2001) the specialized literature has been indicating the de practice of a physical activity during all ages is associated to better indicators of health and life quality.

Considering the level of physical activity as a preponderant factor to a healthy ageing, the evaluation of this factor is necessary for different interactions created to elderly people. Although researches of this issue are pointing that the instruments used to obtain the level of physical activity in old people, especially in studies involving a large number of individuals, are not adequate as they refer to questionnaires. In other words, even in a self administrated form or as an interview, the veracity of the obtained results depends on the precision of the given information and on the influence of memory, despite the actuation of trained interviewers (Benedetti et al., 2004). According Mota (2002), another form of evaluation is the direct observation through movement sensors, which has the capacity of retain data for a long period, giving reliable results about de activity pattern of the elderly, but also not useful to large populations.

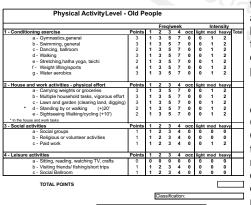
Analyzing various physical activity level questionnaires designed for old people in literature, it has been observed that their use in social and/or cultural different contexts demands studies to determine the validity and fidedignity of these instruments (Mazo et al., 2001). The results of two concurrent validity and reprodutivity studies, the 'Modified Baecke Questionnaire to old people' (Mazo et al., 2001) and the 'International Physical Activity Questionnaire' (IPAQ) to determine the physical activity level of old women (Benedetti & Mazo & Barros, 2004), both suggest that their use is only indicated when the discrimination of the general level of physical activity (less active / more active) is enough. This aspect must be considered, because this indicator will quantify and determine the orientation to exercise practice as program actions to this population.

#### **OBJECTIVE**

The present study has the objective to introduce the building pathways of the physical activity level evaluation instrument for old people. Curitibativa, the discussions based on different instruments research results, the difficulties found by the teachers in the application of this instrument in their groups, the proposed changes over the eight years of evolution and the final result: the introduction of a new instrument.

### **HISTORY**

The proposed instrument was originated on Curitibativa Program of the Municipal Sports and Leisure Secretary of the Curitiba, such in the need of knowledge of the old people inserted on the Program as to the general evaluation of the population. First in the form of a closed questionnaire applied as an interview, with option to included information. The initial version was studied by the teachers who worked with elderly groups during the year of 2002 suffering adjustments over the year 2003, the choice and format of the questions about health, habits, physical and leisure activity were hardly discussed trying to use a terminology culturally accept by the Curitiba population, respecting ethnical and educational differences. But the same instrument was not good enough to determine the level of physical activity of old people, just giving general information about the preferences for certain physical and leisure activities and the week frequency of their practice. So was considered 'active' individuals who had the habit of walk at least 30 minutes per day; or were engaged in any supervised physical activity program



two or more times per week, or had two or more times a week of occupational activities considered tiring by the individual (like gardening, carrying weight for long distances, painting walls, up and down stairs very often, standing more than 15 minutes, etc.). Only in 2003 a question about the individual perception of the effort of the labor activities was added (Kruchelski & Rauchbach, 2005, p.142).

In the attempt to verify the level of physical activity in old people different instruments found in the literature were applied in small groups of Curitibativa Program, as the translated version of "Modified Baecke Questionnaire to old people" and the short and long "IPAQ" version, but none of them appeared to be efficient to this population. The difficulties found by the researches were: the questions were not well understood because of cultural differences; the dispended time was too long leading to poor quality and efficiency of the application; and the result did not show a scale to quantify how much active was the old person interviewed. The suggestion was to study different instruments to build an instrument that correspond to Curitibativa Program needs and really show the level of physical activity of these individuals creating the first instrument (Figure 01).

Fig 1. Physical Activity level Old People, the first instrument built; applied in the years 2006 and 2007.

The total score limits was based in the instrument used with adult population by Curitibativa Program (Kruchelski & Rauchbach, 2005, p.141) and in the week frequency score sum. One of the most argued factors between professionals was the

individuality of the ageing process in relation to the effort perception of certain activity. A single activity could be related as moderate by a group, but for the old person who is beginning the Program, the same activity could be perceived as very intense, because of the sedentary state or health conditions. In the same way, this observation should be considered in the instrument, adding score points to this perception. It was considered for the construction of the classification table: average, median and standard deviation of the results of evaluations made during the pilot study of the instrument.

#### THE EVOLUTION OF THE INSTRUMENT

With the application of this instrument in 2006 and 2007, the evolved teachers pointed some difficulties that were corrected. It was decided to do a study using elderly groups belonging to Curitibativa Program and at the same time collect a daily activities register (Bouchard et al., 1983) that should be fulfilled in three days during the same week of the questionnaire application (one day with regular physical activity, other without this activity and one weekend day), describing the activities and the time used in each one of them. The formularies were delivered in a way that the individual get the second formulary after gives back the first one to the researchers, so any doubt and errors would be cleared before the second task. With these orientations, the registers were well done by the majority of the interviewed people, giving important information to the rebuild of Curitibativa model, especially in reference to common daily activities that were not being considered in the applied questionnaire.

#### Alterations in the instrument:

A) Second topic (home and work activities physical effort); a subdivision was made in the topic "clean the house": in light cleaning (Cleaning house general) and heavy cleaning (Multiple household tasks, vigorous effort), considering that some old people still do the complete cleaning of their homes, while some others just do the light organization. Individuals that were asked about this kind of activity were not considering this small detail, because they imagine only the heavier efforts, ignoring the participation of the home little tasks.

B) Inclusion of the topic "taking care of children up to 7 years or ill person", very often in the registers and common on the modern elderly day by day: helping to raise the grandchildren or the need to take care of a physically dependent partner or family.

- C) The topic "paid work" began to be part of the second topic "home and work activities physical effort".
- D) The topics of "social or recreational activities" were put together. Including "gardening" that was prior included in the "land dealing", by the reason that light gardening and the land work were very incident in the studied population but differ about the adequate score.

E) All the scores were adjusted using the "Compendium of Physical Activities Tracking Guide" (Ainsworth, B. E. et al., 2000). And more columns were added to the instrument for more specific week frequency of the activities.

One of the discussions about the energy cost of the activities score was the validity of this procedure to old people, since the body composition alterations (progressive loss of the lean body mass during the life with reduction in the tasks performance, and the progressive gain of fat body mass) have direct relation with the energy cost, even if this alterations are physiologically normal in the aging process. These implications have been reported in a posterior review work where the authors questioned the use of metabolic rest index in old people (Leal & Fonseca, 2007). But considering that this score would be an estimated form to build this instrument, also the only one available until this moment, it was opted to use it in the model like is represented in the Fig 02.

It was evaluated 1168 old people to build the reference table, where it was obtained: average = 28,3; median =26,5; SD = 15,3; standard error = 0,450 with p = or < 0,00001. The sample was distributed in the interval: 25% = 16,0 and 75% = 38,0. In determining the reference values was led into account the average (average value = moderately active) and (+) or (-) a standard deviation.

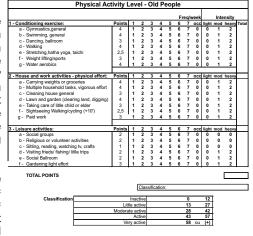


Fig 2. Physical Activity level Old People, the second instrument built; applied in the 2008 year.

## **CONSIDERATIONS**

To study the applicability of the built instrument, its reproducibility and objectivity were investigated, specially the second topic "home and work activities" physical effort", that is more suitable to the state of memory in old people with a bitter influence of the interviewer. Forty old individuals answered the questionnaire and only one did not complete the evaluations. The time between the first and the second tests was ten days to "test and re-test" with the same interviewer and after 30 days the same individual was tested with the questionnaire by two different interviewers within one or two weeks.

The correlation of the second topic "home and work activities physical effort" between two different interviewers was moderate (0,7270). To the other crossing data the results appeared to have a weak correlation: Social or Recreational Activities (0,3682), Conditioning Exercise (0,4214) and Total Score (0,5869). Some factors could had interfere in the results above such as sample size, the fact of the studied group is already part of the systematic activities of the Curitibativa Program, the climate alterations between one test and the next could lead to the prompt of doing something else instead of exercise and usual home tasks. A whole week of rain and cold weather changed the activity pattern related to daily walking, reducing points in the first topic 'Conditioning Exercise' as though in the routine home activities. According to the individuals' reports, the old people prefer to rest postponing the heavy work to a sunny day.

In the application of the instrument (fig 02) in a study to verify the possible inadequacies (not published data), it was observed a initial worry in relation to the activity 'perceived intensity' by the contrast given answers from the elderly; about 45% of the applied questionnaires presented deletions or in blank. The interviewer difficulty to indicate a intensity occurred because of the old person own difficulty to show how much he/she notice the effort in the activity even when the researcher explained like this: on light activities there is no fatigue or sweating; on moderate activities there is a little heat, breathing alteration and sweating, but still have energy to the house tasks; on intense activities there will be no energy to continue another activity after its practice, needing to rest. Because of these contrasts, it was decided to delete the Perceived Intensity from the new version of the proposed instrument.

About the number of times per week, a table with many squares was difficult to visualize, so it was decided to let just one square to write the week frequency correspondent value. It was considered to include the time expended in each activity because the teachers understood that it could be essential to a deeper study, when the professional that works with older groups will need to know the energy cost to a personalized prescription. The time will be counted in hours, including a table of fractioned hour values to help the fulfillment along the interview. The same methodology of the prior instrument was used to the reference table, but in a smaller group of study (n=39), for this reason, the need of apply this instrument in a larger group is necessary to avoid sampling mistakes.

The figure 03 represents the proposed questionnaire with the changes discussed above. After, there are the orientations to the correct fulfillment by the interviewer (fig 04).

Fig 3. Physical Activity level Old People - proposed instrument.

	Dhysical Activity Law	l Old Da			
	Physical Activity Leve				
	What did you do during	the last wee	ek?		
	East the questions for the activities care	ried out during	g the last week.		
1 - Conditioning exercise		Points	Freq/week	time/session	Total
	a - Gymnastics,general	4			
	b - Swimming, general	4			
	c - Dancing, ballroom	3			
	d - Walking	4			
	e - Stretching,hatha yoga, taichi	2,5			
	f - Weight lifting/sports	3			
	g - Water aerobics	4			
2 - House and work activities - physical effort:		Points	Freq/week	time/session	Total
	a - Carrying weights or groceries	4			
	b - Multiple household tasks, vigorous effort	4			
	c - Cleaning house general	3			
	d - Lawn and garden (clearing land, digging)	4			
	e - Taking care of little child or elder	3			
	f - Sightseeing Walking/cycling (+10')	2,5			
	g - Paid work	3			
			•	•	
3 - Leisure activities		Points	Freq/week	time/session	Total
	a - Social groups	2			
	b - Religious or volunteer activities	2			
	c - Sitting, reading, watching tv, crafts	1			
	d - Visiting frieds/ fishing/ little trips	2			
	e - Social Balloroom	2	1		
	f - Gardening light effort	3	1		
	· · · ·		•		
		•			
	CL ASSISICATION		TOTAL	DOINTS	

	CLASSIFICATION		TOTAL F	POINTS	
ı	Inactive	0 - 32	ı r	TIME IN	HOURS
	Little active	33 - 82		5 min	0,08
	Moderate active	83 - 108		10 min	0,17
	Active	109 - 133		15 min	0,25
	Very active	134 (+)		20 min	0,34
•			•	25 min	0,42
GUIDELINES				30 min	0,5
				35 min	0,58
Points: established from the "Compendium of Physical Activities Tracking Guide".				40 min	0,67
Freq/week: frequency: number o		45 min	0,75		
Time/session: Time of session: duration of the activity converted into hours				50 min	0,83
Total: MULTIPLICATION: points X freq/week X time/session.				55 min	0,92
			-		

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How to apply the questionnaire!							
East the questions for the activities carried out during the last week.							
1 - Conditioning exercise:							
Gymnastics,general Swimming, general Dancing, ballroom Walking Stretching,hatha yoga, taichi Weight lifting/sports Water aerobics	What the elderly did last week? Make the appointments to one or more realized activities. Mark the number of times a week the persc participated in the corresponded activity and the time spent in a session. Multiply points, frequency and time per session and put the result in the total place for each activity. Remember that the option walk here means that the person left the house to walk as a physical activity practic oriented or not, instead of walk like just a way to go somewhere else.						
2 - House and work activities - physical e							
Carrying weights or groceries	. Carring shopping bags or boxes (relatively heavy) for a period longer than 10 minutes - ongoing.						
Multiple household tasks, vigorous effort	. Sidewalk washing,scrubbing tile,glass cleaning, hauling furniture,working in crouching down position, washing clothes by hand.						
Cleaning house general	. Cooking, Ironing, washing dishes, fixing the bed, sweeping, taking the powder, hanging the clothes.						
Lawn and garden (clearing land, digging)	. Cleaning land, digging, spading, gardening with heavy power tools.						
Taking care of litlle child or elder	. Including: bathing, feeding, clothing, carring, placing the sick person or small child in a comfortable position.						
Sightseeing Walking/cycling (+10') Paid work	. Going to: the drugstore, market, bank, visiting relatives or other functions where the elderly has to move on foot or by bicycle . Leaving home every day or several days of the week to work.						
3 - Leisure activities:							
Social groups	. Participating in social groups (friends, relatives)						
Religious or volunteer activities	. Going to the church - volunteer work						
Sitting, reading, watching tv, crafts	. Add all time that the elderly spend sitting, eating, reading, napping, sewing or watching TV						
Visiting frieds/ fishing/ little trips	. If the elderly went to a friend's house; park or travel in the last week						
Social Balloroom	. Going to the Balloroom to dance						
Gardening light effort	. Light Gardening: sweep the leaves, sprinkler, picking up yard						

Fig 4. Orientations to the correct fulfillment by the interviewer.

The instrument applied in the pilot study was sent to different health and physical education professionals to a technical critic about the understanding and use of the proposed model, the clarity of the issues, how easy it is to be applied, and the coverage of the old person universe. Four between five sent questionnaires returned and just two of them related the need to amplify the study to adjustments in the reference table.

### **RESULTS AND DISCUSSIONS**

The refining process of the old people questionnaire requires an application with bigger samples than the one used to the development of this instrument, including more heterogeneous people in relation to physical activity practice, because the present study used a group of elderly that are engaged in systematic exercise. Its building construction showed particular ways that are peculiar to the elderly daily life and can proper identify the level of physical activity of old people. Studying the sedentary groups with the proposed instrument could enlighten the real contribution of house tasks in the level of physical activity of the ageing individual and its consequences to the dependence maintenance

Considering the evolution in the creation of this instrument it is believed that it fits the needs of Curitibativa Program teachers as though the other groups evolved in the study of active ageing. Like any and all research instrument, it requires more studies with different population and, if needed, new studies to adjust this model to its own objective.

Key words: Evaluate instrument, physical activity, aging.

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## BUILDING EVOLUTION OF AN EVALUATION INSTRUMENT OF THE PHYSICAL ACTIVITY LEVEL FOR OLD PEOPLE - CURITIBATIVA

**INTRODUCTION:** It is practically an agreement among health professionals that physical activity is a determining factor in the progression of ageing process, being associated with the improvement of health indicators and quality of life. The measurement of the physical activity level is necessary in different interventions for old people. In contrast, the instruments used in this attempt do not seem to be qualified because they are in questionnaire form. Although, the level of physical activity is an indicator will quantify and determine the orientations to exercise practice as the actions of the Programs developed to this population.

**OBJECT:** Introduce the building pathways of the instrument to evaluate the physical activity level in old people from Curitibativa Program, the discussions based on researches results with different instruments, the difficulties related by the teachers of the elderly groups, the proposed changes along eight years of its evolution and the final result: the introduction of a new instrument.

**RESULTS AND CONCLUSION:** Considering the evolution in the creation of this instrument, it is believed that it fits the needs of Curitibativa Program teachers and other groups that are studying the universe of active ageing. As any and all research instrument, are necessary more studies of its application in different populations and, if necessary, more studies to its correspondence to the proposed issue.

Key words: Evaluate instrument, physical activity, aging.

# TRAJECTOIRE DE LA CONSTRUCTION DE L'INSTRUMENT POUR EVALUER LE NIVEAU D'ACTIVITE PHYSIQUE POUR LES VIEUX GENS-CURITIBATIVA

**INTRODUCTION**: C'est pratiquement un accord parmi gens du métier de la santé que l'activité physique est un facteur déterminant dans la progression du processus de vieillissement et est associée avec l'amélioration d'indicateurs de santé et de qualité de vie. La mesure du niveau d'activité physique est nécessaire dans les interventions différentes pour les vieux gens. Mais, les instruments utilisés dans cette tentative ne semblent pas être qualifiés parce qu'ils sont dans la forme de questionnaire. Apendant, c'est l'indicateur quantifiera et déterminera les orientations pour exercer la pratique d'activité physique, comme les actions des Programmes développés à cette population.

**OBJET**: Presenter la trajectoire de la construction de l'instrument pour évaluer le niveau d'activité physique pour les vieux gens du Programme de Curitibativa, les discussions basées sur les résultats de recherches avec les instruments différents, les difficultés presentées par les professeurs des groupes âgés, les changements proposés le long d'huit ans de son évolution et le résultat final : l'introduction d'un nouvel instrument.

**RESULTAT ET CONCLUSION:** Considérer l'évolution dans la création de cet instrument, il est cru qu'il ajuste les besoins de les professeurs du Programme Curitibativa et d'autres groupes qui étudient l'univers du vieillissement actif. Comme n'importe quel et tout instrument de recherche, sont plus d'études nécessaire de son application dans les populations différentes et, si nécessaire, plus d'études à sa correspondance au problème proposé.

Mots-clés: l'instrument d'évaluation, l'activité physique, le vieillissement.

# EVOLUCIÓN DE LA CONSTRUCCIÓN DE UN INSTRUMENTO PARA LA EVALUACIÓN DEL NIVEL DE ACTIVIDAD FÍSICA PARA PERSONAS MAYORES CURITIBATIVA

INTRODUCCIÓN: Es prácticamente un consenso entre los profesionales de la área de la salud que la actividad física es un factor determinante en la progresión del proceso del envejecimiento, estando asociada a la mejora de los indicadores de salud y cualidad de vida. La medida del nivel de la actividad física hace necesaria en las diferentes intervenciones para la populación vieja. Pero, los instrumentos utilizados para su obtención en viejos, no parecen ser adecuados, por se trataren de cuestionarios. Además, esto indicador que va cuantificar y determinar la orientación para la práctica de los ejercicios, como también las acciones de los Programas dirigidos para esta populación.

**OBJECTIVO:** Presenta el paso de la construcción de lo instrumento de avaluación del nivel de la actividad física para viejos. Curitibativa, las discusiones fundamentadas en los resultados de las pesquisas con diferentes instrumentos, las dificultades presentadas por los profesores en la aplicación con los grupos, las alteraciones sugeridas a longo de ocho años de evolución y lo resultado final: la presentación de un nuevo instrumento.

**RESULTADOS Y CONCLUSIÓN:** Considerando la evolución en la creación de lo instrumento acreditase que prestase a las necesidades de los profesores del Programa Curitibativa como también a los demás grupos que pesquisan el universo del envejecimiento activo. Como todo y cada instrumento de pesquisa, son precisos otros estudios para la adecuación de su propósito.

Palabras clave: instrumento de avaluación, actividad física, envejecimiento.

# EVOLUÇÃO DA CONSTRUÇÃO DE UM INSTRUMENTO DE AVALIAÇÃO DO NÍVEL DE ATIVIDADE FÍSICA PARA IDOSOS CURITIBATIVA.

**INTRODUÇÃO:** É praticamente um consenso entre os profissionais da área da saúde que a atividade física é um fator determinante na progressão do processo do envelhecimento, estando associada à melhoria dos indicadores de saúde e qualidade de vida. A medida do nível de atividade física se faz necessária nas diferentes intervenções para a população idosa. Porém, os instrumentos utilizados para sua obtenção em idosos, não parecem ser adequados, por se tratarem de questionários. Contudo, é este indicador que vai quantificar e determinar a orientação para a prática do exercício, como também as ações dos Programas voltadas para esta população.

**OBJETIVO:** Apresentar a trajetória da construção do instrumento de avaliação do nível de atividade física para idosos Curitibativa, as discussões fundamentadas nos resultados das pesquisas com diferentes instrumentos, as dificuldades apresentadas pelos professores na aplicação com os grupos, às alterações propostas ao longo de oito anos de evolução e o resultado final: a apresentação de um novo instrumento.

**RESULTADOS E CONCLUSÃO:** Considerando a evolução na criação desse instrumento acredita-se que ele vem ao encontro das necessidades encontradas pelos professores do Programa Curitibativa como também dos demais grupos que pesquisam o universo do envelhecimento ativo. Como todo e qualquer instrumento de pesquisa, são necessários outros estudos em diferentes populações e se necessário novos estudos para adequação do seu propósito.

Palavras chave: instrumento de avaliação, atividade física, envelhecimento.