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Harmonization of physical activity in multi-centre epidemiological studies. The experience of the CHANCES project

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BACKGROUND

Harmonization of data on exposure and outcome variables is a necessary procedure in epidemiological studies which are of multi-centre nature. The main problem in these studies is that different measurement approaches have been usually appointed across centres, which do not allow the classification of participants in common levels of exposure/outcome variables. Even if a common coding system has been used across centres the classification of subjects may differ due to differences in the application of the common instruments across centres. Such issues are more evident for variables that are difficult to measure, such as physical activity (PA).

AIMS

To investigate data for physical activity collected in centres participating in the Consortium on Health and Ageing Network of Cohorts in Europe and the United States (CHANCES) project and to undertake a harmonization procedure for these data.

THE CHANCES PROJECT

This project aims at combining and integrating on-going cohort studies in order to produce evidence on ageing-related health characteristics and determinants. Fourteen cohorts participate, covering elderly populations from EU Member States, and from the USA.

PHYSICAL ACTIVITY WITHIN CHANCES

Relevant data were collected through questionnaires assessing PA in the past year. Differences across centres referred to the time period and the number of activities covered, as well as, the coding systems.

RESULTS
Table 1. AVAILABILITY OF PA DATA ON INTENSITY AND BY PA DOMAIN

CHANCES COHORTS	WORK DOMAIN	LEISURE TIME DOMAIN		INTENSITY OF PA
		Resting time/sleep	Sports	
Some countries of the EPIC-Elderly cohort	√	√	√	√
Rotterdam Elderly Study	Not assessed yet	Not assessed yet	Not assessed yet	Not assessed yet
ESTHER			√	√
TROMSO	√			√
MORGAM				
Northern Sweden Health and Disease Study	√			
NIH-AARP	√	√		√
Nurses' Health Study		√	√	√
SENECA		√	√	√
Zutphen Elderly Study		√	√	√
NILS Study	Not assessed yet	Not assessed yet	Not assessed yet	Not assessed yet
HAPIEE	√		√	
SHARE				√

Table 2. HARMONIZATION OF PA DATA IN THE CHANCES PROJECT

Harmonized variables	Level of harmonization	Common coding rule
INTENSITY OF PA/ WEEK DURING PAST YEAR	8/13 cohorts	0=No intense activity 1=Any type of intense activity 9=Missing
TIME SPENT IN SPORTS/WEEK DURING PAST YEAR	6/13 cohorts	Calculation of hrs/week engaged in any sport during last year

CONCLUSIONS
• Heterogeneity in PA recording exists across CHANCES cohorts.
• No PA variable can be used to harmonize information in **all** cohorts.
• Two harmonized variables can be used to combine most of the information collected across cohorts: 1) an indicator variable of any type of intense PA and, 2) a variable indicating time engaged to sports.