Does age and sex matter among the relationship between history of physical activity level and functional capacities and body composition in elderly people?

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BACKGROUND:
- Being active and history of physical activity (PA) habits are nowadays recognized as important predictor to prevent physical aging [1]
- However, it is unclear if sex or age influence this relationship and if a sub-type of voluntary PA is more efficient to maintain healthy aging

OBJECTIVE:
- To assess the impact of the last 5-years of PA level on functional capacities and body composition among elderly people

METHODS:
Population: 525 subjects (61.7 ± 8.1 yrs; women=69%; BMI=26.4 ± 4.8 kg/m^2) were enrolled.
Outcomes:
- *Physical performance:* Grip strength (Lafayette©), 3-meters normal Timed Up and Go (sec), 5-rep sit-to-stand (sec), alternate step test (n/20s), isometric knee extension strength (90º; kg), VO2 max (6 min walking test).
- *Body composition:* Fat and fat-free masses (total) using DXA.
- *Physical activity levels (questionnaire):* global (time and duration) and specific (aerobic, resistance or body & mind).
Statistics: Relationship between past PA level and functional capacities or body composition: Multiple regressions adjusted on age, sex and BMI. Sub-group analysis, according to the sex and age (<65y vs. ≥ 65y) : Pearson Correlations.

Table: impact of current PA level or type of PA on functional capacties and body composition

	Current PA Level (min)		Body & Mind activities (min)		aerobic activities (min)		Resistance activities (min)	
	B	*p*	*B*	*P*	*B*	*p*	*B*	*p*
BODY COMPOSITION								
Total FFM (kg)	-0.007	0.94	0.08	0.40	-0.05	0.57	-0.12	0.17
ALMI (kg/m²)	-0.11	0.23	0.07	0.40	-0.001	0.99	-0.017	0.06
Total FM (%)	0.04	0.67	-0.06	0.47	0.10	0.19	-0.09	0.29
MUSCLE FUNCTION								
Grip strength (kg)	-0.05	0.48	0.06	0.36	0.01	0.86	-0.08	0.23
Relative GS (kg/BW)	-0.23	0.45	-0.04	0.91	-0.40	0.19	0.05	0.87
Leg extension (kg)	-0.2	0.74	0.018	0.77	0.09	0.14	-0.06	0.31
Muscle power (N)	0.02	0.75	0.04	0.46	-0.008	0.89	-0.07	0.24
PHYSICAL PERFORMANCE								
TUG (sec)	0.07	0.14	-0.02	0.74	-0.02	0.73	0.02	0.68
TUG fast (sec)	0.006	0.12	-0.09	0.08	0.02	0.64	-0.06	0.19
5 rep Sit-to-Stand (s)	-0.05	0.35	-0.001	0.99	-0.02	0.69	0.06	0.28
Balance (s/ 60sec)	0.05	0.39	0.05	0.38	0.10	0.05	0.09	0.09
Step test (n/20s)	0.04	0.48	-0.006	0.90	-0.04	0.43	-0.08	0.10
VO2 max (L/min/kgBW)	0.009	0.86	-0.045	0.38	0.04	0.89	0.018	0.72

Multiple regression adjusted on age, sex and BMI; Significant : P<0.05 (SPSS 26.0)
ALMI: Appendicular (arm+ leg) Lean Mass Index; FFM: fat free mass; FM: fat mass; GS: grip strenght; TUG: Time Up & Go

RESULTS:
- After adjustment on confounding factors, past level of PA has no impact on functional capacities and body composition, regardless of sex.
- Among people under 65 years, there is no relationship between time spent on total physical activity and functional capacities or body composition.
- However, our study found a significant correlation between total physical activity and balance (r=0.19; P=0.01), alternate-step test (r=0.24; P=0.02) and VO2 max (r=0.19; P=0.02) in people aged 65 and over. More precisely, the time spent on cardio and resistance activities influence balance (r=0.16; P=0.03 and r=0.15; P=0.04, respectively) in in this age category.

CONCLUSION: Our results highlights that PA history has little or no influence on functional capacities and body composition in healthy aging population

References:
[1] Saint-Maurice et al., JAMA Netw Open, 2019.