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# DIFFERENCES IN ANTHROPOMETRIC AND PHYSICAL PERFORMANCE MEASURES IN LAW ENFORCEMENT OFFICERS BASED ON AGE GROUPS



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## ABSTRACT

**PURPOSE:** To identify possible differences in anthropometric and physical performance (PP) measures between different age groups in law enforcement officers (LEO).

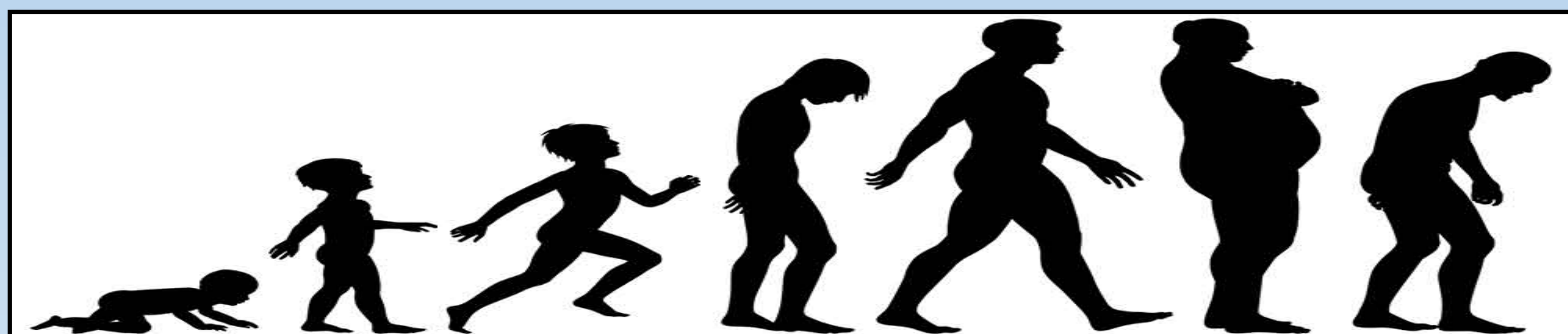
**METHODS:** The cross-sectional study included 769 healthy male LEO (mean age=27.43±3.32 yrs; mean body mass (BM) = 78.42±12.38 kg; mean body height (BH) = 173.33±5.71 cm), divided into three age groups: ≤25 yrs (n=255, mean age = 24.02±0.95 yrs; mean BM=76.97±11.98 kg; mean BH=173.89±5.86 cm); 26-30 yrs (n=355, mean age=27.56±1.44 yrs; mean BM=78.82±11.55 kg; mean BH = 173.37±5.42 cm); and 31-35 yrs (n=159, mean age=32.60±1.37 yrs; mean BM=79.87±14.46 kg, mean BH=172.34±5.86 cm). Collected anthropometric variables included: BM, BH, BMI, Waist Circumference (WC) and Waist to Height Ratio (WHtR). Tested PP related to local muscular endurance (1-minute Push-Up test (PU): 1-minute Sit-Up test: (SU)) and aerobic endurance (2.4 km run test (RU)). Data were collected as a part of preselection process for an Abu Dhabi Police LEO postgraduate course. A one-way ANOVA with Bonferroni post-hoc adjustment was used for identifying possible changes between age related groups, with significance set at  $p < 0.05$  a priori.

**RESULTS:** When compared to the 26-30 and 31-35 yrs groups, the ≤25 yrs group had a significantly lower BMI (-0.78 kg/m<sup>2</sup>,  $p=0.038$  and -1.38 kg/m<sup>2</sup>,  $p=0.001$ ), WC (-2.43 cm,  $p=0.009$  and -4.87cm,  $p>0.001$ ), and WHtR (-0.016,  $p=0.002$  and -0.032,  $p<0.001$ ) while no differences in BM were observed (-1.84 kg,  $p=0.206$  and -2.90 kg,  $p=0.061$ ). LEO from the 26-30 yrs group differed from the 31-35 yrs group in WC (-2.44 cm,  $p=0.030$ ) and WHtR (0.017,  $p=0.006$ ) but not in BM (-1.05 kg,  $p=1.00$ ) or BMI (-0.60 kg/m<sup>2</sup>,  $p=0.303$ ). Better PP was also found in the ≤25 yrs group when compared to older LEO groups of 26-30 yrs and 31-35 yrs in PU (3.47 reps,  $p<0.001$  and 5.12 reps,  $p<0.001$ ), SU (3.36 reps,  $p<0.001$  and 5.11 reps,  $p<0.001$ ) and RU (-41.69 sec,  $p<0.001$  and -61.47 sec,  $p<0.001$ ). PP scores of the 26-35 yrs group were not significantly different from the oldest group in PU (1.65 reps,  $p=0.349$ ), SU (1.75 reps,  $p=0.088$ ) and RU (-19.78 sec,  $p=0.359$ ), however from the mean differences in PP scores it may still be viable that the trend of reduced performance may still exist in the older age group.

**CONCLUSIONS:** This study identified significant differences between age groups with negative impacts of age on anthropometric variables, especially with those related to body weight and which correlated with health status (i.e. BMI, WC and WHtR), and all tested physical abilities.

## PURPOSE:

The main purpose of this study was to investigate the possible negative effects of aging on anthropometric measures, as well as the physical performance of police officers. The information obtained will be useful for appropriate intervention in terms of raising awareness about the potential negative consequences of aging. It is particularly important to point out possible health risk factors as well as factors that interfere with the successful performance of everyday duties.



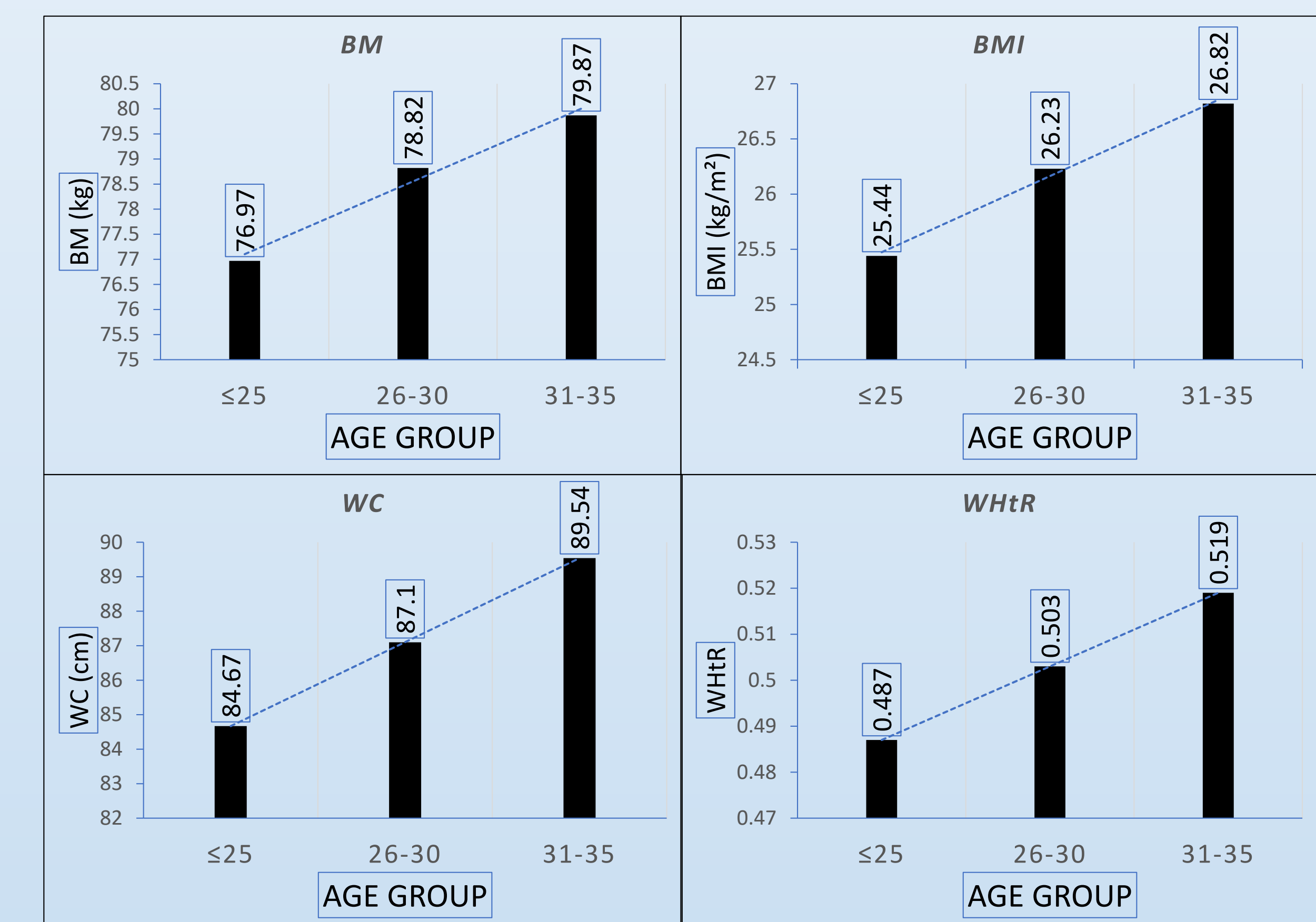
## INTRODUCTION:

- Unfortunately, body composition and physical performances do not resist the impact of biological aging, this phenomenon is also present in the case of law enforcement officers.
- Apart from biological reasons, certainly the specifics of the profession itself, as well as the life habits, contribute to the dynamics of transformation.
- Upon completion of the training academy or college, police officers must participate in regular physical activity and balanced diet, in order to maintain an adequate body weight and the required level of the performances.

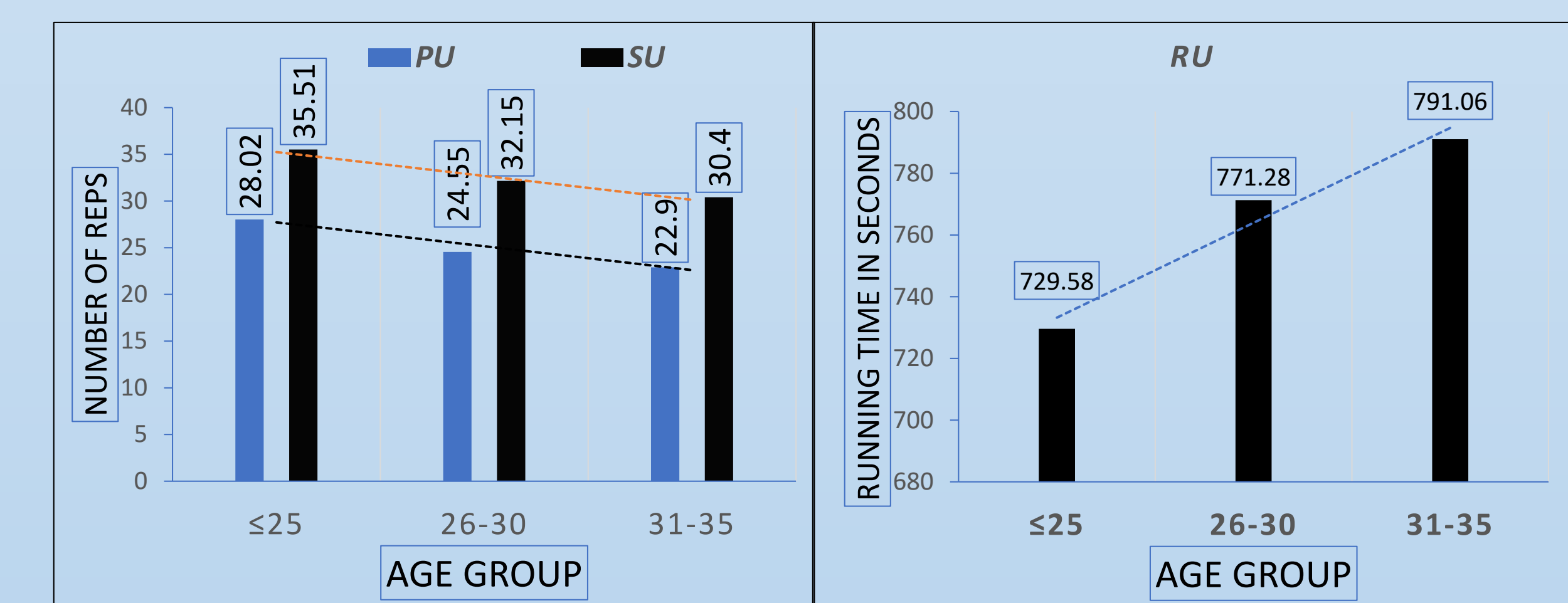
## METHODS:

PARTICIPANTS:	ANTHROPOMETRIC VARIABLES:	PHYSICAL PERFORMANCES (TESTS):
769 Male law enforcement officers divided into 3 age groups:	<ul style="list-style-type: none"> <li>BH-Body Height</li> <li>BM-Body Mass</li> <li>BMI-Body Mass Index</li> <li>WC-Waist Circumference</li> <li>WHtR-Waist to Height Ratio</li> </ul>	<ul style="list-style-type: none"> <li>PU- (1-minute Push-Ups Test)</li> <li>SU - (1- minute Sit-Ups Test)</li> <li>RU- (2.4 km Running Test)</li> </ul>
<ul style="list-style-type: none"> <li>≤25: N=255</li> <li>26-30: N=355</li> <li>31-35: N=159</li> </ul>		
<i>Cross-sectional design</i>	One-Way ANOVA	Post-Hoc: Bonferroni

## RESULTS:



FIGURE\_1: Group differences and trends for anthropometric variables.



FIGURE\_2: Group differences and trends for performance variables.

## CONCLUSIONS:

The study found that aging had a negative impact on both, anthropometric measures and performance. Although this was a relatively young population, the negative trend of aging was present and significant. Regular annual performance fitness tests and regular health checks may be a viable and reasonable solution to aid in the prevention of potential age-related health risks and to maintain a suitable level of physical abilities among law enforcement employees as they age.



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