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The heart of the matter: years saved from cardiovascular and cancer deaths in an elite athlete cohort with over a century of follow-up

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Abstract To quantify the years of life saved from cardiovascular (CVD), cancer and overall deaths among elite athletes according to their main type of physiological effort performed in the Olympic Games. All French athletes participating in the Games from 1924 to 2016, with vital status, registered and cause of death if concerned, identified by the national registers were included ($n = 204$). Athletes were classified according to 4 groups of effort: PWRB (continuous effort < 40 s), STRENGTH (40 s < 1 min), endurance (1 min < 4 h) or PWRB+STRENGTH (continuous effort > 4 h or PWRB+STRENGTH) corresponding to different events involving different disciplines. DIFFERENTIATED (cardiovascular effort), is, non-specific PWRB+STRENGTH (strength effort). The theoretical years lost without non-athletic conditions given to longevity (years saved) according to specific risks under the competing risks model and was implemented in R software. Considering overall deaths, all groups significantly saved, on average, 0.7 years of life (95% CI 0.3–1.2) compared to the general population. The longevity advantage is mostly driven by a lower risk of cancer which, instead, contributed to significantly more 1.2 years of life (95% CI 1.1–1.6) on average across groups. The gap of 1.9 years saved in the PWRB+STRENGTH and PWRB+STRENGTH groups is not significantly different from the general population. The other groups significantly saved, on average, 1.8 years of life (95% CI 1.3–2.3) from CVD deaths. The longevity benefits in elite athletes are associated with the type of effort performed during their career, mostly due to differences in the CVD risk of death.

Keywords Mortality · Athletes · Cardiovascular · Cancer · Vital record · Training

Introduction

Elite athletes exhibit lower mortality in comparison to their counterparts in the general population [1–10]. Studies, including risk-specific mortality, show that the major causes of death—cardiovascular (CVD) and cancer—disorders—tend to be lower in elite athletes [1, 2, 4, 6, 10].

Keywords Longevity benefit. The main reason of this study was to quantify the longevity benefit in elite athletes, which is usually in statistical terms.

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 **TÉLÉCHARGER**

European Journal of Epidemiology

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Objectifs : Quantifier les années de vie sauvées des maladies cardiovasculaires (MCV), du cancer et des décès globaux chez les athlètes d'élite en fonction de leur principal type d'effort physiologique réalisé aux Jeux Olympiques.

Méthode : Tous les athlètes français participant aux Jeux de 1912 à 2012, avec statut vital validé et cause de décès (si concernée) identifiée par les registres nationaux ont été inclus ($n = 2814$, 455 morts) et classés selon 6 groupes d'effort: PUISSANCE (effort continu <45 s); INTERMÉDIAIRE ($45 \text{ s} \leq \text{effort continu} < 600$ s); ENDURANCE (effort continu ≥ 600 s); POLYVALENT (participant à différentes épreuves entrant dans différentes classifications), INTERMITTENT (effort intermittent, c'est-à-dire sports d'équipe); PRECISION (ciblage des événements). La méthode théorique des années perdues a été adaptée pour calculer les gains de longévité (années économisées) en fonction des risques spécifiques sous le modèle des risques concurrents et a été implémentée dans le logiciel R.

Résultat : Compte tenu des décès globaux, tous les groupes ont eu une augmentation significative moyenne de 6,5 années de vie (IC à 95% 5,8-7,2) par rapport à la population générale. Cet avantage de longévité s'explique principalement par un risque plus faible de cancer qui, isolé, a contribué à sauver de manière significative 2,3 années de vie (IC à 95% 1,2-1,9) en moyenne dans chaque groupe. Le risque de mortalité par MCV dans les groupes ENDURANCE et PRECISION n'est pas significativement différent de celui de la population générale. Les autres groupes ont une augmentation significative moyenne de 1,6 année de vie (IC à 95% 1,2-1,9) de décès par MCV. Les avantages de longévité chez les athlètes d'élite sont associés au type d'effort effectué au cours de leur carrière, principalement en raison des différences sur le risque de maladie cardiovasculaire de décès.

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