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Characteristics of Older Swedish Orienteers: Health, Lifestyle, Physical Function, and Sport Participation

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Abstract

Background: As populations age globally, maintaining physical function is essential for healthy aging; however many do not reach recommended activity levels. Orienteering is commonly practiced into older age, yet objective measurements of physical function among older orienteers remain limited. The aim was to characterize older orienteers (≥65 years) regarding sociodemographic factors, health status, lifestyle behaviors, physical function, and orienteering participation, and to examine gender differences and compare with population-based and community-dwelling older adult reference groups. **Methods:** This cross-sectional study included 462 orienteers (36% women; mean age 75 ± 6 years) recruited through orienteering clubs across Sweden. Participants completed a questionnaire based on the Swedish National Public Health Survey, with additional questions on participation motives, anthropometric measurements, and four standardized physical function tests (one-leg stand, grip strength, Timed Up-and-Go, sit-to-stand). Health and lifestyle were compared with a population-based reference (N = 7276) using direct standardization, and physical function was compared with community-dwelling older adults ($N = 1472$) using age-adjusted linear regression. **Results:** Orienteers reported better self-rated health (88.0% vs. 59.4%), lower hypertension (30.1% vs. 56.5%) and diabetes prevalence (3.5% vs. 19.1%), and higher physical activity compliance (96.5% vs. 54.5%), all $p < 0.001$. The main participation motives were enjoyment, exercise, health, social interaction and nature. Orienteers performed better on balance, Timed Up-and-Go, and sit-to-stand tests (all $p < 0.01$); only women's right-hand grip strength differed significantly, favoring orienteers ($p = 0.048$). Within orienteers, men and women performed similarly, except for higher grip strength in men. **Conclusions:** Older orienteers demonstrate more favorable health and lifestyle than the general population, and better physical function than a community-dwelling reference group. These cross-sectional associations do not establish causality and may partly reflect a healthy participant effect.

Keywords: orienteering; older adults; physical function; health; lifestyle; healthy aging; active aging

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1. Introduction

Life expectancy continues to rise globally, and the proportion of older adults is increasing; the number of adults over 60 years old will double, and those over 80 years old will triple, in the coming decades [1]. In Sweden, both the number and proportion of adults aged 60 years and older are increasing, and this upward trend is expected to persist [2].

An aging population is associated with a growing burden of non-communicable diseases, multimorbidity, and age-related conditions such as reduced bone density and elevated fall risk [1,3]. These age-related changes highlight the importance of maintaining physical function to support independence and health in older age.

Regular physical activity, including aerobic and muscle-strengthening activities, reduces the risk of major non-communicable diseases and helps to maintain aerobic capacity and muscle strength in older adults by supporting neuromuscular, cardiopulmonary, and metabolic function [4,5]. High levels of daily sitting are associated with independent health risks, underscoring the importance of reducing sedentary time alongside increasing physical activity [6]. Aerobic and/or resistance exercise can improve performance-based physical function among community-dwelling older adults [7]. According to self-reported physical activity data, approximately 55% of adults aged 65–84 years and 27.7% of those aged 85 years and older report meeting current physical activity recommendations (at least 150 min of moderate-intensity aerobic activity per week) [8]. Self-reported physical activity has been shown to overestimate time spent in physical activity while underestimating sedentary time [9], suggesting that the proportion of older adults who meet recommended activity levels is likely lower. Low levels of physical activity in older age, together with the context of an aging population, underscore the need to increase knowledge of how physical activity can be maintained throughout the aging process.

Orienteering is one form of physical activity commonly continued into later life. It involves prolonged endurance activity, performed through walking or running, combined with continuous navigational decision-making, where participants independently choose routes to control points using a map and compass. Competitive events are structured to enable participation into older age, including individuals beyond 90 years, through age-specific classes offered across different levels of difficulty. Compared with other common sports in Sweden, orienteering has a higher average participant age, reflecting a broader age distribution and a sport culture that supports continued involvement across the lifespan [10]. This makes the sport particularly relevant in studies of aging and physical activity. Previous research has shown that individuals with experience in orienteering are associated with higher levels of spatial cognitive abilities, including spatial processing and memory, compared with physically active non-orienteering controls [11]. Furthermore, older orienteers have demonstrated faster reaction times and more efficient attentional control than non-orienteering controls, particularly under conditions of high cognitive demand and time pressure [12]. A mixed-methods study using self-reported measures and focus group discussions found that older orienteers reported higher physical activity levels, better subjective health, and greater functional well-being compared with a population-based reference group of older adults [13]. Together, these findings point in the same direction, suggesting that orienteering may support several dimensions of healthy aging, yet the evidence has relied primarily on cognitive assessments and self-reported health measures.

Although orienteering places substantial physical demands on its participants and its continued practice into older age, knowledge regarding older orienteers remains limited. Broader characterization of this group, including sociodemographic, health status, and lifestyle characteristics, as well as orienteering history and motivations for continued participation, could help clarify who is reached by the sport and what sustains lifelong engagement. Combining sustained locomotion over variable terrain with continuous navigational decision-making, orienteering may plausibly challenge balance, leg strength, mobility, and coordination, capacities that decline with age [5]. Objective assessments of balance, strength, and functional mobility, key factors related to independence and age-related functional decline, have been insufficiently examined and are therefore needed to complement existing knowledge about this population.

The aim of this study was to characterize older orienteers (≥65 years) regarding sociodemographic factors, health status, lifestyle behaviors, physical function, and self-reported orienteering history, participation patterns, and motivations. The study further aimed to examine gender differences among older orienteers and to compare health status and lifestyle behaviors with the general population, and physical function with community-dwelling older adults.

2. Materials and Methods

This cross-sectional study included men and women aged 65 years or older who participated in recreational orienteering at least once per year. No further inclusion or exclusion criteria were applied. Participants were recruited through public advertisements distributed via local orienteering clubs across Sweden to achieve broad geographic coverage. Participation was possible through pre-registration as well as drop-in attendance at the data collection sites. Data were collected in Gävle, Gothenburg, Huskvarna, Kristinehamn, Leksand, Visby, Västervik, Sundsvall, Stockholm, and Ärla between March 2024 and October 2025. A total of 462 older orienteers participated in the study. Of these, 444 completed both the questionnaire and the physical function tests, whereas 18 participated remotely and completed the questionnaire only. Ethical approval was granted by the Swedish Ethical Review Authority (Dnr 2023-06397-01), and the study was conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent prior to participation. All data were handled confidentially and analyzed in de-identified form, and no individual-level data are presented.

2.1. Measurements

Each participant completed a questionnaire, anthropometric measurements (Table 1), and a battery of physical function tests (Table 2). The questionnaire was based on selected items from the Swedish National Public Health Survey, covering sociodemographic factors, health-related factors (e.g., self-rated health, hypertension, diabetes, depression, and anxiety), and lifestyle behaviors (e.g., physical activity, sedentary time, smoking, snus use, alcohol, and diet). Gender identity was self-reported, and all participants identified as women or men. Health and lifestyle variables were categorized in accordance with the definitions used by the Public Health Agency of Sweden, as detailed in its survey documentation [14]. The variables are presented in Table 3. A set of orienteering-specific questions additionally addressed participants' history in the sport, highest lifetime participation or competition level, frequency of organized orienteering during the season, changes in participation compared with 15–20 years earlier, and motivations for engagement, using an adapted question (Supplementary File S1).

Anthropometric measurements included body mass, height, and waist circumference. Body mass was measured without shoes and heavy clothing using a digital scale (precision 0.1 kg), and height was measured without shoes using a portable stadiometer (precision 0.1 cm). Waist circumference was assessed in a standing position at the midpoint between the lower rib margin and the iliac crest using a non-elastic tape measure (precision 0.5 cm). BMI was calculated using measured body mass and height rather than self-reported questionnaire values. Remote participants were excluded from the BMI analyses.

Four standardized field-based tests were used to assess key dimensions of physical function relevant to aging populations, covering balance, muscular strength, and functional mobility and coordination. Balance was assessed using a one-leg stand test performed on the dominant leg within 60 s [15]. Two outcomes were derived in accordance with the protocol described by Godhe et al. [16], (1) balance time, defined as the time to first step-down (maximum 60 s), and (2) balance score, defined as the total number of ascents,

including the initial ascent (optimal score 1). Grip strength was measured using a handheld digital dynamometer (Sagitta, Sagitta Pedagog AB, Mariestad, Sweden), with three trials per hand performed in a seated position with the elbow flexed at 90 degrees; the highest recorded value was used in the analysis [17]. The Timed Up-and-Go test was used to assess functional mobility and coordination. Participants rose from a chair (seat height 43–46 cm), walked 3 m, turned, walked back, and sat down. The test was performed twice with the fastest time retained for analysis [18]. Finally, the 30-s sit-to-stand test was used to assess functional leg strength, with participants completing as many sit-to-stand repetitions as possible within 30 s, arms crossed over the chest, each repetition requiring full extension of the hip and knee joints at the standing position before returning to sitting [19]. These tests generally demonstrate acceptable to good reliability and validity in older adult populations [17–22]. The same equipment and standardized protocol were used throughout data collection, and all tests were administered by trained assessors.

Table 1. Sample characteristics of orienteers.

Characteristic	*n*	Overall *N* = 462	Men *n* = 296	Women *n* = 166
Age, years	462			
Mean (SD)		75 (6)	76 (6)	73 (5)
Min–Max		65–92	65–92	65–87
BMI, kg/m^2	443	24.0 (2.9)	24.5 (2.8)	23.1 (3.0)
BMI ≥ 30	443	13 (2.9%)	10 (3.5%)	3 (1.9%)
Waist circumference, cm	444	87.9 (10.7)	91.7 (9.5)	81.0 (9.4)
Education level	462			
Primary education		47 (10.2%)	28 (9.5%)	19 (11.4%)
Upper secondary education		150 (32.5%)	116 (39.2%)	34 (20.5%)
Tertiary education		265 (57.4%)	152 (51.4%)	113 (68.1%)
Perceived 2 km capacity	461			
Can run 2 km without stopping		192 (41.6%)	143 (48.3%)	49 (29.7%)
Can run/jog 2 km with rest, or jog without stopping		204 (44.3%)	119 (40.2%)	85 (51.5%)
Can walk 2 km or less		65 (14.1%)	34 (11.5%)	31 (18.8%)
Physical activity before age 20	452			
Sporadically active or below		118 (26.1%)	66 (22.9%)	52 (31.7%)
Regularly active or above		334 (73.9%)	222 (77.1%)	112 (68.3%)
Physical activity age 20–39	454			
Sporadically active or below		95 (20.9%)	52 (17.9%)	43 (26.2%)
Regularly active or above		359 (79.1%)	238 (82.1%)	121 (73.8%)
Physical activity age 40–65	455			
Sporadically active or below		50 (11.0%)	35 (12.0%)	15 (9.1%)
Regularly active or above		405 (89.0%)	256 (88.0%)	149 (90.9%)
Physical activity age 65+	456			
Sporadically active or below		45 (9.9%)	28 (9.5%)	17 (10.5%)
Regularly active or above		411 (90.1%)	266 (90.5%)	145 (89.5%)
Age started orienteering median (IQR)	457	20.0 (13.0, 39.0)	15.0 (13.0, 35.0)	30.0 (13.0, 40.0)
Years of orienteering, mean (SD)	457	41.1 (18.4)	44.0 (17.5)	35.8 (18.7)
Orienteering level	461			
Individual recreational		7 (1.5%)	2 (0.7%)	5 (3.0%)
Organised recreational		167 (36.2%)	92 (31.2%)	75 (45.2%)
Sub-elite		177 (38.4%)	125 (42.4%)	52 (31.3%)
Elite		110 (23.9%)	76 (25.8%)	34 (20.5%)
Current orienteering frequency	459			
Occasionally (<5/year)		25 (5.4%)	9 (3.1%)	16 (9.6%)
Regularly (≥1/month)		73 (15.9%)	49 (16.7%)	24 (14.5%)
Frequently (≥1/week)		361 (78.6%)	235 (80.2%)	126 (75.9%)
Change in orienteering frequency	457			
About the same		152 (33.3%)	101 (34.6%)	51 (30.9%)
Less than before		151 (33.0%)	100 (34.2%)	51 (30.9%)
More than before		154 (33.7%)	91 (31.2%)	63 (38.2%)

Tertiary education includes university education <3 years and ≥3 years.

2.2. Reference Data

Aggregated data from the 2024 Swedish National Public Health Survey [14,23] were used as a reference dataset representing the Swedish general population for comparisons of sociodemographic factors, self-reported health outcomes, and lifestyle behaviors (hereafter the population-based reference) (N = 7276; 52.4% women; 22% with university education;

18% with BMI ≥ 30 kg/m^2). In the unstandardized sample, 51.7% met the recommended 150 min/week of physical activity. For fatigue and loneliness/isolation, reference data from the 2022 Swedish National Public Health Survey were used because these items were not included in the 2024 survey.

Comparisons of physical function were based on individual-level data from community-dwelling older adults in the study by Godhe et al. [16] (hereafter the physical function reference) (N = 1472; 68.8% women; 55.7% with university education; mean age 71.6 ± 5.2 years, range 65–89; BMI was 25.3 ± 3.7 kg/m^2). In this group, 56.7% met the recommended 150 min/week of physical activity. The group completed the same test battery; grip strength in the reference group was assessed in a standing position, whereas a seated position was used in the present study. Not all reference participants completed every test, and the number of participants with available data for each measure is reported in Table 2.

2.3. Statistical Analysis

Descriptive statistics are presented as frequencies and proportions for categorical variables, and as means and standard deviations, or medians and interquartile ranges, for continuous variables, depending on the distribution of data. To compare health status and lifestyle proportions between older orienteers and the general population, direct standardization was used, with the orienteers' age and gender distribution as the standard population. Age was grouped into five-year categories (65–69, 70–74, 75–79, 80–84, and 85 years or older) and crossed with gender. For each variable, the age- and sex-specific reference proportions were weighted by the corresponding orienteer cell sizes and summed, producing a standardized reference proportion that represents the proportion expected if the general population were the same age and had the same gender composition as the orienteers. Comparisons were conducted for the total sample, separately for women and men. The orienteers' observed proportions and the standardized reference proportions are presented with 95% confidence intervals. p-values were obtained from a one-sample proportion test comparing the orienteers' observed proportion with the standardized reference value. Gender differences within the orienteer group were examined using unadjusted chi-square tests. Additional standardization by education and gender was performed to assess whether differences in health and lifestyle indicators persisted after accounting for differences in educational composition between the groups. Education was categorized as primary, upper secondary, and tertiary education and crossed with gender. For each outcome, reference proportions within these strata were weighted by the corresponding proportions of orienteers with non-missing outcome, education, and gender data and summed. The education × gender standardization was performed separately from the age × gender standardization; the three variables were not jointly accounted for.

Physical function results are presented as median and interquartile ranges. Differences in physical function between women and men among the orienteers, as well as differences between orienteers and the physical function reference group, separately for women and men, were examined using linear regression models adjusted for age. For balance outcomes, the absolute difference from the optimal value (60 s for balance time and a score of 1 for balance score) was calculated and multiplied by −1. The transformations were −|balance time − 60| and −|balance score − 1|, respectively. TUG values were also multiplied by −1 (-TUG). Thus, higher transformed values indicated better performance. Results from the regression analyses are presented as regression coefficients with 95% confidence intervals and p-values. Model assumptions were assessed using residual and Q-Q plots, the studentized Breusch-Pagan test, and Cook's distance. Sensitivity analyses used HC3 heteroscedasticity-consistent standard errors for all age-adjusted models.

Participants with missing data for a specific variable were excluded from that analysis, and the number of observations (n) is reported for each variable. Statistical significance was set at $p < 0.05$; p-values are reported as exact values or as levels of significance (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$). As the analyses were exploratory, no correction for multiple comparisons was applied, and findings should be interpreted as hypothesis-generating. All analyses were performed in R (version 4.5.2) [24] using the tidyverse, janitor, gtsummary, broom, flextable, and officer packages.

Table 2. Physical function characteristics of orienteers and the physical function reference.

Gender Difference Among Orienteers				
Outcome	Men Median (IQR), *n*	Women Median (IQR), *n*	β (95% CI) †	*p*
Balance time (s)	60.00 (23.50–60.00) *n* = 283	60.00 (32.75–60.00) *n* = 154	0.98 (−2.83 to 4.78)	0.615
Balance score	1 (1–3) *n* = 283	1 (1–2) *n* = 154	0 (−0 to 1)	0.193
Timed Up-and-Go (s)	5.50 (5.00–6.21) *n* = 288	5.50 (4.91–6.08) *n* = 155	0.11 (−0.08 to 0.31)	0.263
Grip strength right (N)	406 (358–448) *n* = 287	251 (221–282) *n* = 156	160 (148 to 171)	<0.001
Grip strength left (N)	378 (328–420) *n* = 287	230 (204–261) *n* = 156	154 (143 to 165)	<0.001
Sit-to-stand (repetitions)	19 (16–22) *n* = 286	19 (16–24) *n* = 155	−0 (−1 to 1)	0.520
Men: orienteers vs. reference				
Outcome	Orienteers Median (IQR), *n*	Reference Median (IQR), *n*	β (95% CI) ‡	*p*
Balance time (s)	60.00 (23.50–60.00) *n* = 283	60.00 (20.00–60.00) *n* = 328	7.40 (3.92 to 10.87)	<0.001
Balance score	1 (1–3) *n* = 283	1 (1–3) *n* = 328	1 (0 to 2)	<0.001
Balance score = 1, n (%)	173 (61.1%)	183 (55.8%)	—	—
Timed Up-and-Go (s)	5.50 (5.00–6.21) *n* = 288	6.00 (5.05–7.00) *n* = 395	0.86 (0.64 to 1.08)	<0.001
Grip strength right (N)	406 (358–448) *n* = 287	421 (368–482) *n* = 436	−3 (−15 to 9)	0.602
Grip strength left (N)	378 (328–420) *n* = 287	394 (348–450) *n* = 435	−7 (−18 to 4)	0.215
Sit-to-stand (repetitions)	19 (16–22) *n* = 286	16 (13–20) *n* = 186	4 (3 to 4)	<0.001
Women: orienteers vs. reference				
Outcome	Orienteers Median (IQR), *n*	Reference Median (IQR), *n*	β (95% CI) §	*p*
Balance time (s)	60.00 (32.75–60.00) *n* = 154	60.00 (20.00–60.00) *n* = 737	8.02 (4.46 to 11.59)	<0.001
Balance score	1 (1–2) *n* = 154	1 (1–4) *n* = 737	1 (0 to 2)	0.003
Balance score = 1, n (%)	105 (68.2%)	415 (56.3%)	—	—
Timed Up-and-Go (s)	5.50 (4.91–6.08) *n* = 155	6.09 (5.47–7.13) *n* = 893	1.00 (0.77 to 1.24)	<0.001
Grip strength right (N)	251 (221–282) *n* = 156	249 (216–286) *n* = 947	9 (0 to 17)	0.048
Grip strength left (N)	230 (204–261) *n* = 156	233 (201–269) *n* = 948	2 (−6 to 11)	0.564
Sit-to-stand (repetitions)	19 (16–24) *n* = 155	15 (13–19) *n* = 440	4 (4 to 5)	<0.001

Values are median (IQR), with non-missing *n*; balance score = 1 is reported as n (%). β represents age-adjusted mean differences from linear regression: † men vs. women among orienteers; ‡ orienteers vs. reference men; § orienteers vs. reference women. All *p*-values derive from these models. Higher β indicates better performance. Balance outcomes reflect proximity to optimal values (60 s and score 1); Timed Up-and-Go values were reversed.

3. Results

3.1. Sample Characteristics

The sample comprised 462 orienteers, of which 166 were women (36%), with a mean age of 75 ± 6 years (range 65–92), and 57% reported having a university education. Ac-

cording to national data from the Swedish Orienteering Federation, nearly 4900 unique competitors aged ≥65 years participated in at least one orienteering event in Sweden during the data collection period, with 30% women and a mean age of 73.7 years (written communication, April 2026). In comparison, the study sample represented approximately 10% of this source population, with a similar proportion of women and a comparable mean age.

The orienteers reported high levels of physical activity across the lifespan, with 73.9% being regularly active or at elite level before age 20, rising to 90.1% at age 65 and older (Table 1). Regarding self-perceived physical capacity, 41.6% estimated they could run 2 km without stopping. The median age at which participants began regular orienteering was 20 years (IQR 13–39), and the mean cumulative duration of regular participation was 41.1 ± 18.4 years. Of the participants, 23.9% competed at the elite level and an additional 38.4% at the sub-elite level at some point during their orienteering career. The majority (78.6%) participated in organized orienteering at least once per week during the orienteering season.

3.2. Motivation Factors

The distribution of motivation factors for orienteering participation among women and men is presented in Figure 1. The five most important motivations for orienteering were enjoyment (60.1% of men and 66.3% of women), exercise (59.5% and 67.5%), health (48.3% and 50.6%), social interaction (37.2% and 47.6%), and nature (36.5% and 48.8%), based on the proportion of "very important" ratings in both groups. Rewards, performance, and social atmosphere were consistently rated as the least important motivations across both groups.

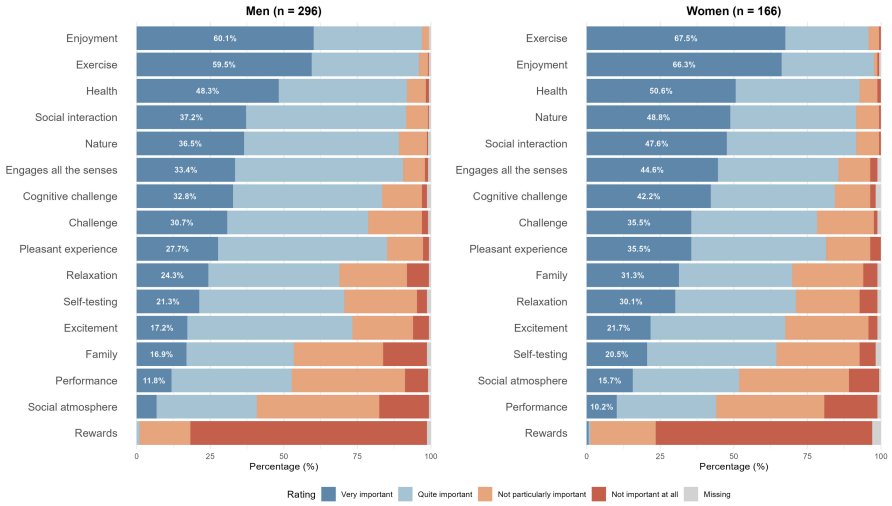

Figure 1. Motivations for participating in orienteering among older orienteers, shown separately for men ($n = 296$) and women ($n = 166$). Bars represent the percentage distribution of importance ratings (very important, quite important, not particularly important, not important at all, or missing), with factors ordered by decreasing proportion of "very important" ratings within each group.

3.3. Assessment of Health Status and Lifestyle Behaviors

Health status and lifestyle behaviors of the study sample are presented in Table 3. Similar health and lifestyle profiles were observed in men and women, with the following exceptions: men reported higher prevalence of hypertension (33.8% vs. 23.5%, $p = 0.028$), while women more frequently reported depression (8.4% vs. 3.5%, $p = 0.041$), anxiety symptoms (17.5% vs. 7.1%, $p = 0.001$), sleep difficulties (47.0% vs. 22.3%, $p < 0.001$), and lower sugary drink consumption (91.0% vs. 79.7%, $p = 0.003$) and less frequently used snus daily (0.0% vs. 4.4%, $p = 0.014$).

Compared with the age- and gender-standardized general population, orienteers reported more favorable health and lifestyle across several indicators (Table 3). Self-rated health was higher (good or very good: 88.0% vs. 59.4%), and the prevalence of hypertension (30.1% vs. 56.5%) and diabetes (3.5% vs. 19.1%) was substantially lower. Orienteers also reported meeting the physical activity recommendations far more often (150 min/week: 96.5% vs. 54.5%), as well as less sitting time, lower risky alcohol use, less perceived stress, and higher fish intake. After education standardization, most significant differences between orienteers and the population-based reference remained, with some minor changes in percentage values (Table 4).

3.4. Physical Function Tests

Orienteers performed better than the reference group on several measures of physical function (Table 2 and Figure 2). After age adjustment, the differences were significant for balance (both time and score), Timed Up-and-Go, and sit-to-stand, in both gender (all $p \leq 0.003$). The difference was particularly clear for sit-to-stand, where orienteers completed a median of 19 repetitions compared with 16 (men) and 15 (women) in the reference group. Balance showed a ceiling effect, with a median balance time of 60 s and a median score of 1 in both groups, although a larger proportion of orienteers maintained balance for the full minute without a step-down. Grip strength did not differ significantly between groups, except for higher right-hand strength among women orienteers ($p = 0.048$).

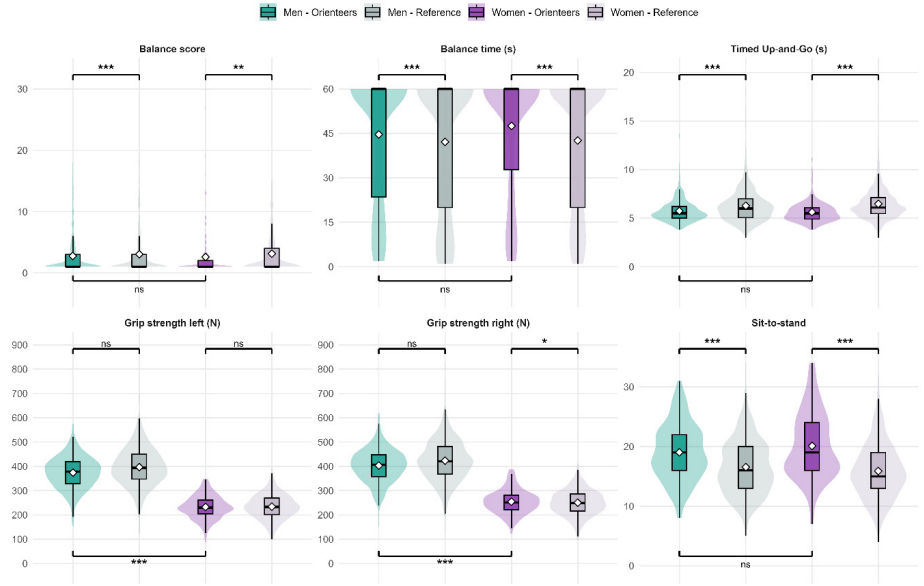

Figure 2. Physical function by gender and group among older orienteers and the physical function reference. Violin plots show the distribution of each physical function measure with boxplots indicating median and interquartile range, and white diamonds indicating mean values. Higher values indicate better performance, except for balance score and Timed Up-and-Go. Results are shown separately for men and women; sample sizes vary by measure and are reported in Table 2. Upper brackets indicate age-adjusted comparisons between orienteers and the reference group, separately for men and women. Lower brackets indicate age-adjusted comparisons between men and women within the orienteer group. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, ns = not significant.

Within the orienteer group, grip strength was the only test that differed by gender, with men showing higher values in both hands ($p < 0.001$); no other gender differences were observed. Residual plots indicated departures from normality, particularly for balance and TUG. Unequal residual variance was detected (Supplementary Table S1). The pattern of statistically significant findings was unchanged using HC3 standard errors (Supplementary Table S2).

Table 3. Health and lifestyle characteristics of orienteers and the general population reference (standardized to the orienteers' age × sex distribution).

Characteristic	Overall $N = 462$ % (95% CI) [1]	Men $n = 296$ % (95% CI) [1]	Women $n = 166$ % (95% CI) [1]	p (Gender) [2]	Reference Overall $N = 7068$ % (95% CI) [3]	Reference Men $n = 3361$ % (95% CI) [4]	Reference Women $n = 3707$ % (95% CI) [5]
Self-rated health: Good/Very good	88.0 [84.6, 90.8]	87.1 [82.6, 90.6]	89.7 [83.8, 93.7]	0.504	59.4 [58.2, 60.6] ***	58.7 [57.0, 60.4] ***	60.6 [58.9, 62.2] ***
Self-rated health: Poor/Very poor	1.1 [0.4, 2.7]	1.4 [0.4, 3.7]	0.6 [0.0, 3.8]	0.783	7.6 [7.0, 8.3] ***	8.2 [7.2, 9.1] ***	6.7 [5.8, 7.5] **
Long-term health condition	42.8 [38.3, 47.5]	44.9 [39.1, 50.8]	39.2 [31.8, 47.1]	0.273	53.3 [52.0, 54.5] ***	54.3 [52.6, 56.0] **	51.5 [49.7, 53.2] **
Hypertension	30.1 [25.9, 34.6]	33.8 [28.4, 39.6]	23.5 [17.3, 30.9]	0.028	56.5 [55.3, 57.8] ***	58.3 [56.7, 60.0] ***	53.4 [51.7, 55.1] ***
Diabetes	3.5 [2.1, 5.7]	4.7 [2.7, 8.0]	1.2 [0.2, 4.7]	0.085	19.1 [18.1, 20.1] ***	21.8 [20.4, 23.2] ***	14.1 [12.9, 15.3] ***
Depression diagnosis	5.3 [3.5, 7.9]	3.5 [1.8, 6.5]	8.4 [4.9, 14.0]	0.041	14.3 [13.5, 15.2] ***	10.7 [9.7, 11.8] ***	20.6 [19.2, 22.0] ***
Anxiety symptoms	10.8 [8.2, 14.1]	7.1 [4.6, 10.8]	17.5 [12.2, 24.3]	0.001	30.6 [29.5, 31.7] ***	25.6 [24.1, 27.1] ***	39.6 [37.9, 41.2] ***
Fatigue †	29.7 [25.6, 34.1]	30.7 [25.6, 36.4]	27.7 [21.2, 35.3]	0.563	55.8 [54.5, 57.1] ***	55.2 [53.5, 57.0] ***	56.8 [55.1, 58.5] ***
Sleep difficulties	31.2 [27.0, 35.6]	22.3 [17.8, 27.6]	47.0 [39.3, 54.9]	<0.001	44.8 [43.6, 46.0] ***	39.5 [37.9, 41.2] ***	54.2 [52.5, 55.9]
High perceived stress	0.9 [0.3, 2.4]	0.3 [0.0, 2.2]	1.8 [0.5, 5.6]	0.266	5.6 [5.1, 6.2] ***	4.6 [3.9, 5.3] ***	7.4 [6.5, 8.3] **
No emotional confidant	7.8 [5.6, 10.7]	9.2 [6.2, 13.2]	5.4 [2.7, 10.4]	0.210	10.9 [10.2, 11.7] *	11.4 [10.4, 12.5]	10.1 [9.0, 11.1]
Loneliness/isolation †	6.9 [4.9, 9.7]	6.8 [4.3, 10.4]	7.2 [4.0, 12.6]	>0.999	19.5 [18.5, 20.5] ***	16.3 [15.0, 17.6] ***	25.2 [23.8, 26.7] ***
Meets 150 min/week PA	96.5 [94.3, 97.9]	96.6 [93.7, 98.3]	96.4 [91.9, 98.5]	>0.999	54.5 [53.2, 55.7] ***	54.2 [52.5, 55.9] ***	54.9 [53.3, 56.6] ***
Meets 300 min/week PA	72.5 [68.1, 76.4]	74.7 [69.2, 79.4]	68.5 [60.7, 75.4]	0.189	30.4 [29.3, 31.5] ***	30.5 [28.9, 32.0] ***	30.2 [28.7, 31.8] ***
Sits ≥ 10 hours/day	5.4 [3.6, 8.0]	6.1 [3.8, 9.6]	4.2 [1.9, 8.8]	0.520	15.7 [14.7, 16.6] ***	17.8 [16.5, 19.1] ***	11.9 [10.8, 12.9] **
Fruit & vegetables ≥ 3/day	22.9 [19.2, 27.1]	19.9 [15.6, 25.0]	28.3 [21.7, 35.9]	0.052	16.5 [15.6, 17.4] ***	12.6 [11.4, 13.7] ***	23.4 [22.0, 24.9]
Sugary drinks ≤ once/week	83.8 [80.0, 86.9]	79.7 [74.6, 84.1]	91.0 [85.3, 94.7]	0.003	78.8 [77.7, 79.8] *	74.0 [72.5, 75.5] *	87.3 [86.2, 88.4]
Fish ≥ 2/week	42.6 [38.1, 47.3]	39.5 [34.0, 45.4]	48.2 [40.4, 56.0]	0.087	27.2 [26.1, 28.3] ***	26.2 [24.7, 27.7] ***	28.9 [27.4, 30.4] ***
Daily smoking	0.0 [0.0, 1.0]	0.0 [0.0, 1.6]	0.0 [0.0, 2.8]		6.6 [6.0, 7.2] ***	5.8 [5.0, 6.6] ***	8.1 [7.2, 9.1] ***
Daily snus use	2.8 [1.6, 4.9]	4.4 [2.5, 7.6]	0.0 [0.0, 2.8]	0.014	8.6 [7.9, 9.4] ***	11.8 [10.7, 12.8] ***	3.1 [2.4, 3.7] *
Risky alcohol consumption	3.0 [1.7, 5.2]	3.4 [1.7, 6.3]	2.4 [0.8, 6.4]	0.764	9.9 [9.1, 10.6] ***	10.7 [9.6, 11.7] ***	8.5 [7.5, 9.5] **

[1] Orienteers' proportion (%) with 95% CI (continuity-corrected score method). N/n = number of non-missing observations per variable. [2] Unadjusted p-value for the difference between men and women among orienteers (chi-square test); no age adjustment was applied. [3–5] SReference: % (95% CI), standardized to orienteers' age × gender distribution overall and age distribution within each gender. Source: Swedish National Public Health Survey 2024 († 2022). Reference N reflects the 2024 self-rated health sample; sample sizes vary by item and year. Orienteer–reference comparisons (one-sample proportion tests): * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4. Health and lifestyle characteristics of orienteers and the general population reference (standardized to the orienteers' education × sex distribution).

Characteristic	Overall $N = 462$ % (95% CI)[1]	Men $n = 296$ % (95% CI) [1]	Women $n = 166$ % (95% CI) [1]	p (Gender) [2]	Reference Overall $N = 7026$ % (95% CI) [3]	Reference Men $n = 3343$ % (95% CI) [4]	Reference Women $n = 3683$ % (95% CI) [5]
Self-rated health: Good/Very good	88.0 [84.6, 90.8]	87.1 [82.6, 90.6]	89.7 [83.8, 93.7]	0.504	61.7 [60.4, 63.0] ***	62.2 [60.4, 64.0] ***	60.8 [59.0, 62.6] ***
Self-rated health: Poor/Very poor	1.1 [0.4, 2.7]	1.4 [0.4, 3.7]	0.6 [0.0, 3.8]	0.783	7.5 [6.8, 8.2] ***	7.5 [6.6, 8.5] ***	7.5 [6.5, 8.4] **
Long-term health condition	42.8 [38.3, 47.5]	44.9 [39.1, 50.8]	39.2 [31.8, 47.1]	0.273	54.8 [53.4, 56.1] ***	54.1 [52.3, 55.9] **	56.0 [54.1, 57.8] ***
Hypertension	30.1 [25.9, 34.6]	33.8 [28.4, 39.6]	23.5 [17.3, 30.9]	0.028	54.5 [53.1, 55.8] ***	54.9 [53.1, 56.7] ***	53.7 [51.8, 55.6] ***
Diabetes	3.5 [2.1, 5.7]	4.7 [2.7, 8.0]	1.2 [0.2, 4.7]	0.085	17.0 [16.0, 18.0] ***	19.8 [18.4, 21.2] ***	11.9 [10.8, 13.1] ***
Depression diagnosis	5.3 [3.5, 7.9]	3.5 [1.8, 6.5]	8.4 [4.9, 14.0]	0.041	15.5 [14.6, 16.5] ***	12.2 [11.0, 13.4] ***	21.3 [19.7, 22.8] ***
Anxiety symptoms	10.8 [8.2, 14.1]	7.1 [4.6, 10.8]	17.5 [12.2, 24.3]	0.001	29.5 [28.3, 30.7] ***	25.2 [23.6, 26.8] ***	37.1 [35.3, 38.9] ***
Fatigue †	29.7 [25.6, 34.1]	30.7 [25.6, 36.4]	27.7 [21.2, 35.3]	0.563	54.7 [53.3, 56.1] ***	53.1 [51.2, 55.0] ***	57.6 [55.7, 59.5] ***
Sleep difficulties	31.2 [27.0, 35.6]	22.3 [17.8, 27.6]	47.0 [39.3, 54.9]	<0.001	44.4 [43.1, 45.7] ***	39.5 [37.7, 41.3] ***	53.1 [51.2, 55.0]
High perceived stress	0.9 [0.3, 2.4]	0.3 [0.0, 2.2]	1.8 [0.5, 5.6]	0.266	5.4 [4.8, 6.0] ***	4.4 [3.7, 5.1] **	7.2 [6.3, 8.2] *
No emotional confidant	7.8 [5.6, 10.7]	9.2 [6.2, 13.2]	5.4 [2.7, 10.4]	0.210	11.2 [10.3, 12.0] *	11.9 [10.7, 13.1]	9.9 [8.8, 11.0]
Loneliness/isolation †	6.9 [4.9, 9.7]	6.8 [4.3, 10.4]	7.2 [4.0, 12.6]	>0.999	21.1 [20.0, 22.2] ***	16.9 [15.4, 18.3] ***	28.6 [26.8, 30.4] ***
Meets 150 min/week PA	96.5 [94.3, 97.9]	96.6 [93.7, 98.3]	96.4 [91.9, 98.5]	>0.999	58.0 [56.7, 59.4] ***	58.9 [57.1, 60.7] ***	56.5 [54.7, 58.3] ***
Meets 300 min/week PA	72.5 [68.1, 76.4]	74.7 [69.2, 79.4]	68.5 [60.7, 75.4]	0.189	33.5 [32.2, 34.8] ***	34.1 [32.4, 35.9] ***	32.4 [30.6, 34.2] ***
Sits ≥ 10 h/day	5.4 [3.6, 8.0]	6.1 [3.8, 9.6]	4.2 [1.9, 8.8]	0.520	17.4 [16.4, 18.5] ***	19.5 [18.0, 20.9] ***	13.8 [12.5, 15.1] ***
Fruit & vegetables ≥ 3/day	22.9 [19.2, 27.1]	19.9 [15.6, 25.0]	28.3 [21.7, 35.9]	0.052	19.6 [18.5, 20.6]	14.7 [13.4, 16.0] *	28.2 [26.5, 29.9]
Sugary drinks ≤ once/week	83.8 [80.0, 86.9]	79.7 [74.6, 84.1]	91.0 [85.3, 94.7]	0.003	81.6 [80.6, 82.6]	77.8 [76.3, 79.3]	88.4 [87.3, 89.6]
Fish ≥ 2/week	42.6 [38.1, 47.3]	39.5 [34.0, 45.4]	48.2 [40.4, 56.0]	0.087	33.2 [31.9, 34.4] ***	31.9 [30.2, 33.6] **	35.4 [33.6, 37.2] ***
Daily smoking	0.0 [0.0, 1.0]	0.0 [0.0, 1.6]	0.0 [0.0, 2.8]		5.2 [4.6, 5.7] ***	4.8 [4.1, 5.6] ***	5.8 [5.0, 6.6] **
Daily snus use	2.8 [1.6, 4.9]	4.4 [2.5, 7.6]	0.0 [0.0, 2.8]	0.014	8.2 [7.4, 9.0] ***	11.4 [10.3, 12.6] ***	2.5 [1.9, 3.1]
Risky alcohol consumption	3.0 [1.7, 5.2]	3.4 [1.7, 6.3]	2.4 [0.8, 6.4]	0.764	10.9 [10.0, 11.8] ***	12.7 [11.5, 13.9] ***	7.7 [6.7, 8.7] *

[1] Orienteers' proportion (%) with 95% CI (continuity-corrected score method). N/n = number of non-missing observations per variable. [2] Unadjusted p-value for the difference between men and women among orienteers (chi-square test); no age adjustment was applied. [3–5] Reference: % (95% CI), directly standardized to orienteers' education × gender distribution overall and education distribution within each gender, without age adjustment. Source: Swedish National Public Health Survey 2024 († 2022). Reference N reflects the 2024 self-rated health sample; sample sizes vary by item and year. Orienteer–reference comparisons (one-sample proportion tests): * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4. Discussion

In this cross-sectional study among 462 older orienteers, main findings were that orienteers demonstrated a markedly more favorable health status and lifestyle behaviors compared with the general older population, and better objectively measured physical function than the reference group. Participants rated enjoyment, health, and social interaction as important motives for participation.

4.1. Health Status and Lifestyle Behaviors

Nearly all orienteers met the recommended 150 min of weekly physical activity, compared with approximately half of the general older population. The substantially lower prevalence of hypertension and diabetes aligns with associations between regular physical activity and reduced cardiometabolic risk [4,5]. The low prevalence of sedentary behavior, smoking, and risky alcohol consumption further supports a pattern of favorable lifestyle behaviors across multiple domains. Within the orienteer group, women reported higher prevalence of depression, anxiety and sleep difficulties than men, whereas hypertension was more common among men, suggesting that some gender-related health differences persist despite high levels of physical activity.

4.2. Physical Function

Physical function was consistently more favorable among orienteers compared with the reference group, with significantly better static balance, functional mobility, and functional lower-limb performance after adjustment for age. Orienteering combines sustained locomotion over variable terrain with continuous navigational decision-making, which may place demands on dynamic balance, functional leg strength, and mobility control. These capacities are central to older adults' independence, as functional leg strength supports the ability to perform daily activities [5,7], dynamic balance is essential for reducing fall risk [3,6], and mobility underpins safe and functional movement in everyday life [5–7]. Sit-to-stand performance, in particular, is increasingly recognized as a prognostic marker of healthy aging, with better performance predicting a lower risk of multiple health conditions, including disability and functional decline, in older adults [25]. Orienteers performed significantly better on this test than the reference groups, positioning them favorably on this prognostically relevant measure.

Many participants in both groups reached the 60-s maximum in the one-leg stand test, suggesting a ceiling effect that may have limited the ability to distinguish balance performance among higher-functioning participants. Future studies could include more challenging dynamic balance tests or dual-task assessments combining cognitive and motor tasks, which may better reflect the demands of orienteering. Grip strength was the only measure showing no consistent group difference. Consideration should be given to the fact that the groups were tested in different positions, as the reference group was tested standing. Grip strength values have been shown to vary depending on body position, with standing associated with the highest value [26]. Grip strength is also not specifically trained through orienteering, and median grip strength values in both groups were well above the cut-off values for low grip strength [27]. The group strength comparisons should therefore be interpreted with caution.

4.3. Motivations for Continued Participation

The motivations most frequently rated as "very important" for continued participation were enjoyment, exercise, health, social interaction, and nature. Performance, social atmosphere, and rewards were least frequently rated as "very important". These patterns are consistent with those of Östlund-Lagerström et al. [13] who identified enjoyment, passion,

being outdoors, and social interaction as central motives for continued orienteering in older age. Social interaction as a central motive is reflected in research into other sports popular among older adults. In walking football, socializing was the most commonly reported reason for participation, followed by exercise [28]. That the social dimension emerges as a key motive across structurally different sports underscores its importance for sustained engagement in physical activity.

The low importance assigned to performance and rewards is notable, given that the present sample included a substantial proportion of former elite and sub-elite competitors. However, the overall motivation ratings do not establish the motives of these subgroups or changes in motivation over time. Such a motivational profile may, in part, help explain the high activity volumes and lifelong continuity observed in this group, as motives rooted in enjoyment and well-being may be more readily sustained over decades than motives tied to competitive outcomes that diminish with age.

4.4. Strengths and Limitations

The combination of objective physical function tests with questionnaire data provides a more comprehensive characterization of older orienteers than has previously been available. The use of nationally representative survey data collected during the same period as the orienteer data strengthens the relevance of the comparisons. However, all health and lifestyle variables were self-reported and may therefore be subject to recall and social desirability bias, although the same assessment approach was used in both groups. The physical function tests required minimal equipment and could be administered to multiple participants within a limited timeframe, enabling data collection across multiple regions in Sweden and providing broad geographic coverage. The study further benefits from a large and detailed reference dataset for physical function, enabling more precise comparisons than would be possible when relying solely on published summary statistics.

The cross-sectional design precludes causal inference. Most participants reported regular or elite-level physical activity before age 20, and the mean duration of orienteering participation was 41 years. The favorable health and physical function observed may therefore partly reflect lifelong physical activity and a healthy participant effect, whereby individuals with better health and functional capacity are more likely to continue orienteering into older age. These data cannot distinguish such selection from a potential contribution of orienteering itself. The observed differences should therefore be interpreted as associations rather than causal effects of orienteering. Further selection may have occurred during recruitment, as those who volunteered for testing may have been healthier and more motivated than the wider population of older orienteers. Some participants declined individual tests, often because they felt unable to perform them. This may have left those with lower functional capacity underrepresented and led to an overestimation of physical performance. A similar consideration applies to the reference groups, as individuals who respond to surveys or volunteer for physical testing may differ from those who do not. Response rates to the Swedish National Public Health Survey are known to be lower among individuals with lower educational attainment [23], and some bias in the reference group cannot be excluded. The physical function reference group consisted exclusively of older adults from Stockholm, which may limit the generalizability of comparisons to other regions in Sweden. Grip strength comparisons may have been influenced by differences in testing posture, as orienteers were assessed seated and the reference group standing, and should therefore be interpreted with caution. The ceiling effect in balance time and the discrete, skewed balance scores limit discrimination between high-performing participants. The one-sample proportion tests did not account for sampling uncertainty in the standardized reference proportions. The large number of statistical comparisons increases the possibility

that some statistically significant findings occurred by chance. Results should therefore be interpreted cautiously, considering the magnitude of the observed differences and the precision of the estimates, as reflected by their 95% confidence intervals, rather than statistical significance alone.

5. Perspective

Whereas previous research on older orienteers has primarily relied on self-reported measures and cognitive assessments [11–13] the present study extends current knowledge by providing objective measures of physical function. The favorable health and lifestyle observed are consistent with previous self-reported findings [13], and the objective assessments indicate favorable functional capacity. The cross-sectional design precludes causal inference, and longitudinal research is needed to establish whether continued orienteering contributes to the favorable outcomes observed, or whether healthier individuals are simply more likely to maintain participation.

In the context of an aging population [1,2], these findings illustrate the potential of orienteering as a setting for sustained physical activity into older age. They may also inform efforts by public health and sport organizations to promote sport structures that accommodate continued participation across the lifespan. Participants rated enjoyment, exercise, health, social interaction, and nature as important motivations for participation. These findings may help sport clubs and public health organizations design opportunities for continued physical activity in older age. Possible approaches include walking-based orienteering, courses adapted to different physical and navigational abilities, and opportunities for social interaction. Future longitudinal studies should test the hypothesis that orienteering and the identified participation motives support sustained physical activity into older age.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/geriatrics11060159/s1, Table S1. Linear model diagnostics for physical function outcomes; Table S2. Sensitivity analyses using HC3 standard errors. Supplementary File S1. Study questionnaire.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Swedish Ethical Review Authority (Dnr 2023-06397-01) on 13 November 2023.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available because they contain information that could compromise the privacy of research participants, in accordance with the ethical approval and informed consent obtained.

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References

1. World Health Organization. Ageing and Health. 2025. Available online: https://www.who.int/news-room/fact-sheets/detail/ageing-and-health (accessed on 10 December 2025).
2. Statistics Sweden. Sveriges Framtida Befolkning 2023–2070. 2023. Available online: https://www.scb.se/contentassets/e99a33e517a343488cd1fd73362167c8/be0401_2023i70_br_be51br2302.pdf (accessed on 10 March 2026).
3. Sherrington, C.; Fairhall, N.; Kwok, W.; Wallbank, G.; Tiedemann, A.; Michaleff, Z.A.; Ng, C.A.C.M.; Bauman, A. Evidence on physical activity and falls prevention for people aged 65+ years: Systematic review to inform the WHO guidelines on physical activity and sedentary behaviour. *Int. J. Behav. Nutr. Phys. Act.* **2020**, *17*, 144. [CrossRef] [PubMed]
4. Dhuli, K.; Naureen, Z.; Medori, M.C.; Fioretti, F.; Caruso, P.; Perrone, M.A.; Nodari, S.; Manganotti, P.; Xhufi, S.; Bushati, M.; et al. Physical activity for health. *J. Prev. Med. Hyg.* **2022**, *63*, E150–E159. [CrossRef] [PubMed]
5. McPhee, J.S.; French, D.P.; Jackson, D.; Nazroo, J.; Pendleton, N.; Degens, H. Physical activity in older age: Perspectives for healthy ageing and frailty. *Biogerontology* **2016**, *17*, 567–580. [CrossRef] [PubMed]
6. World Health Organization. *WHO Guidelines on Physical Activity and Sedentary Behaviour*, 1st ed.; World Health Organization: Geneva, Switzerland, 2020. Available online: https://iris.who.int/server/api/core/bitstreams/faa83413-d89e-4be9-bb01-b24671aef7ca/content (accessed on 26 October 2026).
7. Chase, J.A.D.; Phillips, L.J.; Brown, M. Physical activity intervention effects on physical function among community-dwelling older adults: A systematic review and meta-analysis. *J. Aging Phys. Act.* **2017**, *25*, 149–170. [CrossRef] [PubMed]
8. Public Health Agency of Sweden. Levnadsvanor—Resultat för Uppföljningen av Folkhälsopolitikens Målområde. Available online: https://www.folkhalsomyndigheten.se/publikationer-och-material/publikationsarkiv/l/levnadsvanor-malomrade-6/?pub=121077 (accessed on 13 March 2026).
9. Dyrstad, S.M.; Hansen, B.H.; Holme, I.M.; Anderssen, S.A. Comparison of self-reported versus accelerometer-measured physical activity. *Med. Sci. Sports Exerc.* **2014**, *46*, 99–106. [CrossRef] [PubMed]
10. Bergström, M.; Jong, M.; Sæther, S.A. Orienteering from cradle to grave—How a sport could offer lifelong participation. *Soc. Sci.* **2021**, *10*, 146. [CrossRef]
11. Waddington, E.E.; Heisz, J.J. Orienteering experts report more proficient spatial processing and memory across adulthood. *PLoS ONE* **2023**, *18*, e0280435. [CrossRef] [PubMed]
12. Pesce, C.; Cereatti, L.; Casella, R.; Baldari, C.; Capranica, L. Preservation of visual attention in older expert orienteers at rest and under physical effort. *J. Sport Exerc. Psychol.* **2007**, *29*, 78–99. [CrossRef] [PubMed]
13. Östlund-Lagerström, L.; Blomberg, K.; Algilani, S.; Schoultz, M.; Kihlgren, A.; Brummer, R.J.; Schoultz, I. Senior orienteering athletes as a model of healthy aging: A mixed-method approach. *BMC Geriatr.* **2015**, *15*, 76. [CrossRef] [PubMed]
14. Public Health Agency of Sweden. Syfte Och Bakgrund Till Frågorna i Nationella Folkhälsoenkäten 2024. 13 November 2024. Available online: https://www.folkhalsomyndigheten.se/publikationer-och-material/publikationsarkiv/s/syfte-och-bakgrund-till-fragorna-i-nationella-folkhalsoenkaten-2024/ (accessed on 11 March 2026).
15. Sundstrup, E.; Jakobsen, M.D.; Andersen, J.L.; Randers, M.B.; Petersen, J.; Suetta, C.; Aagaard, P.; Krustrup, P. Muscle function and postural balance in lifelong trained male footballers compared with sedentary elderly men and youngsters. *Scand. J. Med. Sci. Sports* **2010**, *20*, 90–97. [CrossRef] [PubMed]
16. Godhe, M.; Rönquist, G.; Nilsson, J.; Ekblom, Ö.; Nyberg, L.; Edman, G.; Andersson, E. Reliability in novel field-based fitness measurements and postexercise scores from a physical fitness test battery in older adults. *Gerontology* **2024**, *70*, 639–660. [CrossRef] [PubMed]
17. Jordre, B.; Schweinle, W. Hand grip strength in senior athletes: Normative data and community-dwelling comparisons. *Int. J. Sports Phys. Ther.* **2020**, *15*, 519–525. [CrossRef]
18. Zhou, J.; Yao, Q.; Han, R.; De Bock, P.; Vassard-Yu, G.; Hallemans, A.; Van Laer, L. Reliability and validity of instrumented timed up and go test in typical adults and elderly: A systematic review. *Arch. Phys. Med. Rehabil.* **2025**, *106*, 1092–1107. [CrossRef] [PubMed]
19. Jones, C.J.; Rikli, R.E.; Beam, W.C. A 30-s chair-stand test as a measure of lower body strength in community-residing older adults. *Res. Q. Exerc. Sport* **1999**, *70*, 113–119. [CrossRef] [PubMed]
20. Bohannon, R.W.; Schaubert, K.L. Test–Retest reliability of grip-strength measures obtained over a 12-week interval from community-dwelling elders. *J. Hand Ther.* **2005**, *18*, 426–428. [CrossRef] [PubMed]
21. Mathiowetz, V.; Weber, K.; Volland, G.; Kashman, N. Reliability and validity of grip and pinch strength evaluations. *J. Hand Surg.* **1984**, *9*, 222–226. [CrossRef] [PubMed]
22. Cuenca-Garcia, M.; Marin-Jimenez, N.; Perez-Bey, A.; Sánchez-Oliva, D.; Camiletti-Moiron, D.; Alvarez-Gallardo, I.C.; Ortega, F.B.; Castro-Piñero, J. Reliability of field-based fitness tests in adults: A systematic review. *Sports Med.* **2022**, *52*, 1961–1979. Correction in *Sports Med.* **2022**, *52*, 1981–1982. https://doi.org/10.1007/s40279-022-01654-7. [CrossRef] [PubMed]

23. Public Health Agency of Sweden. Dokumentation—Nationella Folkhälsoenkäten. 26 February 2025. Available online: https://www.folkhalsomyndigheten.se/statistik-och-data/om-vara-data/om-vara-datainsamlingar/nationella-folkhalsoenkaten/dokumentation-nationella-folkhalsoenkaten/ (accessed on 16 April 2026).
24. R Core Team. *R: A Language and Environment for Statistical Computing*, version 4.5.2; R Foundation for Statistical Computing: Vienna, Austria, 2021. Available online: https://www.r-project.org/ (accessed on 10 March 2026).
25. Castro-Piñero, J.; Alcazar, J.; Cuenca-García, M.; Fernandez-Gamez, B.; Ara, I.; Ortega, F.B. Sit-to-stand test emerges as a powerful prognostic factor of future health outcomes: Different versions, measurement properties and future perspectives. *Br. J. Sports Med.* **2026**, *60*, 844–847. [CrossRef] [PubMed]
26. Xu, Z.Y.; Gao, D.F.; Xu, K.; Zhou, Z.Q.; Guo, Y.K. The effect of posture on maximum grip strength measurements. *J. Clin. Densitom.* **2021**, *24*, 638–644. [CrossRef] [PubMed]
27. Cruz-Jentoft, A.J.; Bahat, G.; Bauer, J.; Boirie, Y.; Bruyère, O.; Cederholm, T.; Cooper, C.; Landi, F.; Rolland, Y.; Sayer, A.A.; et al. Sarcopenia: Revised European consensus on definition and diagnosis. *Age Ageing* **2019**, *48*, 16–31. Correction in *Age Ageing* **2019**, *48*, 601. https://doi.org/10.1093/ageing/afz046. [CrossRef] [PubMed]
28. Andersson, H.; Caspers, A.; Godhe, M.; Helge, T.; Eriksen, J.; Fransson, D.; Börjesson, M.; Ekblom-Bak, E. Walking football for Health—Physiological response to playing and characteristics of the players. *Sci. Med. Footb.* **2025**, *9*, 68–75. [CrossRef] [PubMed]

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