function. Furthermore, this association may differ according to gender. Therefore, this study aimed to investigate the association between thyroid hormone levels, SMM and muscular fitness components in overweight/obese male and female individuals.
Methods: Twenty-five males (mean age: 46.3 ± 14.5 years, BMI: 32.0 ± 4.3 kg/m^2, fat mass: 32.3 ± 7.4%) and thirty females (mean age: 39.5 ± 15.6 years, BMI: 32.3 ± 4.2 kg/m^2, fat mass: 43.3 ± 6.4%) in a euthyroid state were recruited. SMM was assessed using bioelectrical impedance analysis (BIA 101 Akern). Grip strength was evaluated on the dominant hand using the handgrip test (HG), while muscle strength of the lower body was assessed with the chair-stand test (CST). Thyroid hormones of interest were serum concentrations of free-triiodothyronine (FT3) and free-thyroxine (FT4).
Results: In males, a positive correlation between SMM and FT3 levels was found (r = 0.469, p = 0.018). In addition, SMM was positively correlated with FT4 levels (r = 0.517, p = 0.008), whereas a negative correlation between CST and FT4 levels was found (r =— 0.439, p = 0.028). In females, a positive correlation between FT3 levels and HG was observed (r = 0.392, p = 0.032).
Conclusions: A preserved SMM in the presence of excess of body mass and fat may stimulate thyroid function in males. The effect of thyroid function on muscular fitness components may differ between males and females. Whether thyroid hormone levels may be a parameter indicative of muscular functionality in overweight/obese individuals is still under investigation.
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Effect of physical activity on cognitive performance and motor fitness in primary school children

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Purpose: In recent years, there has been a growing focus on the importance of physical activity in promoting health and cognitive development in primary school children. Therefore, the aim of this study was to investigate the effect of physical activity level on cognitive performance and motor fitness in primary school children. The secondary aim was to test the possible association between cognitive performance and motor fitness.
Methods: Seventy middle-aged children (37 males: 10.4 ± 0.6 years; 33 females: 10.3 ± 0.5 years) were recruited to participate in the present study from an elementary school. They filled in the Physical Activity Questionnaire for Children (PAQ-C). Using cut-off points of previous studies, they were categorized as "sufficiently active" or "low-active" based on PAQ-C scores. They were tested on cognitive performance (inhibitory control by the Flanker task and attention by the visual search task), motor fitness (by the countermovement jump), agility (by the Modified agility t-test), speed (by the 10-m sprint), balance (by the Balance Error Scoring System) and reaction time (by the Clinical reaction time).
Results: For inhibition, although the group x flanker condition interaction was not significant, the main effects of flanker condition ($p < 0.001$) and group (p = 0.031) were significant. Of note, the post-hoc analysis revealed that sufficiently active children showed faster response time in the incongruent condition of the Flanker task than low active children (p = 0.05). For attention, the group x number of items interaction was not significant, as well as the main effect of group (p = 0.38), whereas the main effect of number of items was significant ($p < 0.001$).
There were significant associations between the congruent and incongruent conditions of the Flanker task and the motor fitness tests ($0.3 < r < 0.5$, $p < 0.05$), whereas performance in the Visual search task did not correlate with the motor fitness tests.
Conclusions: These findings suggest that physical activity level has an effect on inhibitory control and motor fitness, whereas it does not influence attention in primary school children. Therefore, physical activity seems to be associated to motor fitness and executive functions domain of cognition (inhibitory control), rather than to general domain of cognition (attention). This is further corroborated by the significant association between inhibitory control and motor fitness.

Hiking above the threshold to maximize post-exercise hypotension

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Purpose: The literature documents the influence of high-intensity exercise, especially above the ventilatory threshold (VT), on blood pressure (BP). The temporary decrease in BP, particularly systolic BP (sBP), following exercise is referred to as Post-Exercise Hypotension (PEH). Despite the benefits of exercise on BP, no study has yet investigated the impact of outdoor activities on PEH. Therefore, the study aimed to investigate the PEH response following hiking and its relationship with the duration spent above the VT (MIN ≥ VT).
Methods: The study included one female (F, age: 23 years; body mass: 65 kg; height: 167 cm; BMI 23.3 kg/m^2) and one male (M, age: 24 years; body mass: 72 kg; height: 180 cm; BMI: 22.2 kg/m^2). To identify the corresponding values of oxygen uptake (VO_2) and heart rate (HR) at VT, subjects underwent a submaximal incremental walking test. During the test, participants selected a speed that represented comfortable walking during the first 2-min stage at 0% treadmill grade. Subsequently, the grade was increased by 2% at each stage until 95% of the estimated maximum heart rate (HRmax) was achieved. VT was determined using the v-slope method. Following 24-h of rest, participants underwent a field session involving a selected hike (length ~ 3800 m). sBP was measured 15-min before (PRE) and 30-min after (POST) the hike. PEH was calculated as the difference between sBP PRE and POST. VO_2 and HR were continuously recorded throughout the hike to assess the internal load.
Results: The hike was completed in 45: 19 min (MIN ≥ VT = 14 min) by F, while M completed it in 42: 43 min (MIN ≥ VT = 0 min). The average HR for F was 133 ± 15 bpm, corresponding to 68%HRmax, and for M 120 ± 15 bpm corresponding to 62% of HRmax, indicating a light to moderate intensity. The average values of VO_2 were 20.2 ± 6.5 ml/kg/min for F (VO_2 MIN ≥ VT = 28.2 ± 2.3 ml/kg/min) and 14.5 ± 5.1 ml/kg/min for M. Both individuals exhibited lower sBP values during POST (F: 103 mmHg; M:

117 mmHg) compared to PRE (F: 128 mmHg; M: 130 mmHg), resulting in PEH of 25 mmHg for F and 13 mmHg for M.
Conclusions: Despite variations in sBP levels, PEH was observed in both participants. The MIN ≥ VT appeared to play a crucial role in enhancing PEH, particularly in the F participant. These results emphasize the importance of training at high-intensity levels, specifically above the VT, to maximize the sBP reduction following outdoor activities.

Effects of a single session of static and dynamic stretching on joint range of motion and single-leg stability

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Purpose: Static and dynamic stretching acutely increase joint range of motion (ROM), but there is also some evidence suggesting transient changes in single-leg stability[1]. The objective of this study is to assess the acute effects of a single session of static and dynamic stretching targeting various body areas on ROM and single-leg stability parameters.
Methods: Forty healthy volunteers were randomly assigned to either the static stretching group (SSG) or the dynamic stretching group (DSG). Four test days were conducted in a randomized order, with each participant being tested on a separate day for neck lateral inclination, knee extension, hip internal rotation, and ankle dorsiflexion. Additionally, the right and left single-leg stability test was performed during all test days. Joint ROM was assessed using 2D video analysis software (Kinovea, France), while single-leg stability was measured using a pressure platform (FreeMed, Sensor Medica, Italy). Ellipse area, sway path length, transversal (Δx) and sagittal (Δy) motion of the center of pressure (CoP) were collected for single-leg stability. During each test session, participants underwent baseline assessments for ROM and single-leg stability, followed by 1 stretching exercise, for the target body area, repeated 3 set × 30″ for each side right and left, either static or dynamic depending on the assigned group. After stretching, a post-intervention assessment was conducted. Data analysis involved a two-way ANOVA for the group × condition interaction, and Student's t-test was used to determine significant differences between pre and post stretching. The significance level was set at $P < 0.05$.
Results: Both SSG and DSG improved joint ROM for each area of the body between pre- and post-intervention assessments, except for the DSG in left hip internal rotation (33.4 ± 7.6° vs 34.6 ± 7.6°, p = 0.164) and left ankle dorsiflexion (18.1 ± 6.3° vs 17.4 ± 5.4°, p = 0.399). The SSG did not show any modifications in single-leg stability.While the DSG exhibited an increase in transversal motion (Δx) of the CoP for the left leg after neck stretching (20.7 ± 7.0 mm vs 23.5 ± 5.9 mm, p = 0.046). Moreover DSG, showed an increase in ellipse area for the left leg after hip external rotators stretching (497.9 ± 332.8 mm^2 vs 800.6 ± 414.3 mm^2, p = 0.014), and for the right leg after calf stretching (535.8 ± 294.6 mm^2 vs 717.5 ± 357.9 mm^2, p = 0.034).
Conclusions: Contrary to the common belief that static stretching may have negative effects before any type of physical activity, the findings of this study lead us to conclude that static stretching is actually safer than dynamic stretching in training conditions that prioritize balance and single-leg stability. This is particularly relevant for activities such as postural exercise, injury prevention, and adapted physical activities.
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Breath again, a pilot project for the validation of respiratory gymnastics protocol, based on yoga and feldenkrais, for healthcare professionals with post-COVID-19 conditions: follow up

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Purpose: The 'Breath again' project was created thanks to the Health Promotion Programme of the Department of Public Health of the Bologna AUSL. It consisted of six meetings lasting two hours each, from October to December 2021. The activity included sessions of Yoga and Feldenkrais (respiratory exercise protocol) and aimed at healthcare professionals who showed respiratory difficulties after SARS-CoV-2 infection. The results after the project were promising; therefore it was proposed to the participants to take part in follow-up after one year in order to confirm the long term positive effects.
Methods: Of the 16 participants, 14 joined the follow up through the administration of the EuroQol-5D-5L questionnaire (EQ-5D-5L) and the 1-min Sit-to-Stand test (1 m-STS). The 1 m-STS test was carried out by all participants. The questionnaire was completed by 13 out of 14 participants; 12 out 14 participants also replied to the VAS scale of 0 to 100 for the timely health assessment. The information collected was processed through Wilcoxon tests for common data, with significance established for p-value < 0, 05.
Results:
The data collection was carried out by taking as T0 the start of the course, as T1 the end of the activity (approximately 6 weeks from T0) and as T2 the follow-up to 1 year after the end of the project.

The values of the 1 m-STS test showed an average increase of 8, 36 (T0 = 31, 93 ± 10, 50; T2 = 40, 29 ± 13, 84; P = 0, 0017).

The synthetic index EQ-5D-5L showed an average increase of 0, 19 (T0 = 0, 65 ± 0, 38; T2 = 0, 84 ± 0, 26; P = 0, 0234). The largest differences were found in 'usual activities' (work, study, household work, family or leisure activities) and 'pain or discomfort'. In addition, the quantitative health assessment at the time of completing the questionnaire, coded using the VAS scale, showed an average increase of 9, 67 (T0 = 73, 67 ± 19, 70; T2 = 83, 33 ± 10, 52; P = 0, 0391).
Conclusions:

A behavioral intervention for the adoption of a healthier lifestyle in people with diabetes mellitus

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