Results: Eighty-four patients were assessed at T0, and 69 of them (M = 44, aged = 65 ± 11 years) completed the 1-year follow up (HB group n = 34, UC n = 35). At baseline, no differences were noted for demographics, clinical characteristics or exercise capacity. The HB group executed 89% (range 75-100%) of the prescribed sessions, while UC group attended the 55% (range 21-88%) of walking appointments between T0 and T1. The mean walking time was 60 and 85 min respectively; no adverse events related to training were recorded.
At the end of the programs, and also at 1-year of follow up, the between-group comparison highlighted significant differences in favor of HB group compared to UC over the three timepoints T0-T1-T2 for the 6MWT (288-399-437 m vs 316-355-398 m; $p < 0.01$), for 30STS (10-12-14 reps vs 10-11-12 reps; $p = 0.048$) and for PCS-12 (40-49-48 vs 42-46-44; $p = 0.039$).
Conclusions: an in-home low-intensity progressively increasing walking program was more effective at improving mobility than unstructured walking in patients after Covid-19 infection with prolonged hospitalization. The benefits obtained after the 3-month home-based structured training were also maintained at 1-year follow up.
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Tension reduction and re-lenghtening of muscle- tendon unit in young and old tibialis anterior

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Purpose: During an alternating movement of a joint, the inversion of the rotational component of the joint movement happens for the contraction of the agonist muscle, and for the relaxation/re-lengthening of the previously active muscle that is now being configured as antagonist. Gait can be considered as a global alternating movement resulting by the combination of several joints alternating flex-extension sequences with an ordered sequence of agonist and antagonist muscles contraction/relaxation. The aim of the work is to compare young and old muscle- tendon unit deactivation/re-lengthening process which can affect the biomechanics of a daily life crucial gesture such as gait.
Methods: The static contraction of tibialis anterior muscle of 20 young (Y) subjects (age 21–33 years old) and 20 older (O) adults (65–80 years old) was studied. A 3 s train of supra-maximal electrical stimulations (35 Hz) was delivered on tibialis anterior motor point while recording the output torque (T) and the muscle transverse dimensional variation, mirroring the re-lengthening process, thanks the laser detected surface mechano-myogram (MMG). During the relaxation phase a delay (D) can be observed between the end of the stimulation and the beginning of signals (T and MMG) decay: DT and DMMG. Using a 20 ms moving window along the collected signals during the off phase the maximum rates of torque and MMG reduction were calculated (RRT and RRMMG). These parameters were calculated also on the normalized signals (NRRT and NRRMMG).
Results: DT in O and Y was 51.35 ± 15.21 ms and 22.51 ± 5.92 ms, respectively ($p < 0.001$). DMMG in O and Y was 61.41 ± 18.42 ms and 27.38 ± 6.93 ms, respectively ($p < 0.001$). RRT in O and Y was − 52.72 ± 32.12 Nm/s and 110.4 ± 45.56 Nm/s, respectively ($p < 0.001$). RRMMG in O and Y was − 13.76 ± 6.54 mm/s and − 24.47 ± 10.95 mm/s, respectively ($p < 0.001$). NRRT in O and Y was −1026.26 ± 267.76%/s and − 1256.16 ± 333.36%/s, respectively ($p = 0.02$). NRRMMG in O and Y was − 710.35 ± 178.84%/s and − 867.79%/s ± 148.67, respectively ($p = 0.004$).
Conclusions: These functional data, easy to be obtained during the relaxation phase after static contraction, suggest that the reduction of the tension and the re-lengthening process take place later and slower in O vs Y and provide biomechanical evidences that may contribute to explain the longer gait phases and the reduction of the walking speed typical of the elderly subjects.

The effect of a submaximal incremental running test on post exercise hypotension in normotensive and non-normotensive subjects

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Purpose: Arterial blood pressure is strongly influenced by exercise modality and intensity in both normotensive and non-normotensive subjects. Exercise can also contribute to the temporary decrease in blood pressure during the post-exercise period, a phenomena known as post-exercise hypotension (PEH), with vigorous intensity exercises having higher effects. The aim is to investigate the PEH response following a submaximal incremental running test on a treadmill and to compare the decrease magnitude in normotensive and non-normotensive subjects.
Methods: 15 young individuals (female = 5; male = 10) aged 24.8 ± 2.8 years were allocated in 2 groups based on their pre-test systolic blood pressure (sBP). Group 1 included subjects with sBP ≤ 129 mmHg, whereas group 2 those who had pre-test sBP>129mmHg. Subjects' sBP was measured 15-min before and 30-min after the test. Volunteers completed a familiarization session and, after 48-h, one submaximal incremental running test. The tests were carried out on a treadmill and consisted of a 3-min warm- up at 1% gradient, fixed for the entire duration of the test, at a comfortable speed. Afterwards, the speed was increased by 1 km/h every 2-min until the end point of the test determined by their 90% estimated heart rate max. Means and standard deviations of pre-test and post-test sBP were calculated for both groups. Repeated measures mixed models were performed to examine the effects of the submaximal test on subject's sBP. Subjects were considered the random effect, whereas the groups (1 Vs 2) and testing time (pre Vs post) were treated as the fixed effect. Statistical significance was set at $p < 0.05$.
Results: Statistically significant ($p < 0.05$) reductions in sBP after the submaximal incremental test were evident in both groups. Group 1 reached an average reduction in sBP of 7mmHg (pre = 117 ± 7; post = 110 ± 5), while Group 2 had an average reduction of 13mmHg (pre = 139 ± 13; post = 126 ± 6). PEH thus occurred independently of pre-test sBP levels. However, the magnitude of the effect was higher in Group 2 with respect to Group 1.
Conclusions: Exercises of short duration and vigorous intensity, such as submaximalrunning incremental test, would seem to induce PEH in normotensive subjects andchanges of greater magnitude in non-normotensive subjects. The incrementalsubmaximal running test can elicit PEH, and therefore can be used to promote sBPreductions, by simulating the antihypertensive action of medications.