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3 **Effects of a Tapering Period on Physical Condition in Soccer Players**

4 *Optimal periodization to boost soccer players' fitness*

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2 No external financial support was received for this study.

3 **Abstract**

4

5 The aim of this research was to analyze the effects of a two-week step tapering
6 period on lower-limb muscle power, change of direction (COD) and acceleration
7 capacities, and on the stress-recovery state in an amateur soccer team. Twenty-two
8 male players were included in the study. Following a six-week progressive
9 training, the sample was divided into: experimental group ($n = 11$), who did a
10 two-week period of taper in which training volume was 50% reduced (intensity
11 was kept high) and control group ($n = 11$), which kept on with the training.
12 Muscle power (countermovement jump test), acceleration (10m sprint test), COD
13 (Illinois test) and stress and recovery perceptions (RESTQ questionnaire) were
14 evaluated before training, at the end of it (pre-tapering, PRE-TP) and after the
15 tapering period (post-tapering, POST-TP). Following the taper, the experimental
16 group in comparison to the control group showed significantly improved power
17 (1029.71 ± 108.51 W/kg vs. 1084.21 ± 110.87 W/kg; $p < 0.01$), acceleration (1.72
18 ± 0.09 s vs. 1.67 ± 0.07 s; $p < 0.05$), and lower stress levels (1.9 ± 0.5 vs. 1.6 ± 0.5 ; p
19 < 0.01) (PRE-TP vs. POST-TP, respectively). COD did not show significant
20 changes. In conclusion, a two-week step tapering program was found to be an
21 effective periodization strategy to increase muscle power and acceleration, and to
22 reduce stress perception in soccer amateur players.

23

24 **Key Words:** Periodization, Team Sports, Recovery, Physical Fitness.

1 INTRODUCTION

2

3 Soccer is a high-intensity intermittent and multi-component sport in which
4 performance relies not only on individual factors such as physical fitness or
5 technical skills but also on the interaction among the players within the team for
6 optimal tactical strategies (31). The game involves multiple motor skills and
7 running is the predominant one, yet explosive type efforts such as sprints, jumps,
8 dribbling, kicking, are also important for successful performance (2). These quick
9 efforts depend on optimal physical capabilities, among which lower limb
10 anaerobic power is particularly important (9,27).

11

12 Soccer League championships are characterized by a long competitive
13 season with frequent matches and training sessions that could induce chronic
14 fatigue on the players (34). Due to this fact, a balance between training stimulus
15 and physical recovery is fundamental to optimize physiological adaptations and
16 physical performance while avoiding excessive fatigue (24). In order to achieve
17 this goal, progressive planning of the training load around the competitive phases
18 and its continuous monitoring are relevant procedures (36). High training loads
19 with insufficient periodization of recovery periods has been suggested to cause
20 overreaching and overtraining in team sport players such as soccer (22). In an
21 attempt to maximize performance after an intense training period, a short-term
22 reduction of training load at the end of a mesocycle has been found beneficial to
23 avoid excessive physiological and psychological stress (5). This periodization

1 strategy, known as “tapering”, is characterized by reducing the volume and/or
2 frequency of training while intensity is maintained (5).

3

4 The improvements in physical condition and performance following a
5 tapering period have been mostly studied in individual sports, with less research
6 performed in team sports (5). Research done in semi-professional male rugby
7 players (10), elite female basketball players (28), young male (16) and elite soccer
8 players (14) support the benefits of tapering on team sports performance, too.
9 However, there is still a paucity of information on the effectiveness of
10 manipulating training load on specific physical condition components such as
11 anaerobic muscle power and related components such as change of direction
12 (COD), which are relevant to reach optimal fitness level in soccer players (29).

13

14 A better understanding of the training stimulus and adaptations occurring
15 during progressive loading and tapering periods may improve training load
16 prescription and periodization for soccer players. Therefore, the aim of this
17 research was to examine the effect of a two-week step taper period on physical
18 condition characteristics such as muscle power, COD and acceleration in an
19 amateur soccer team. In addition, we evaluated the effect of decreasing training
20 load (TL) during taper weeks on subjective stress and recovery perceptions.

21

22

1 **METHODS**

2

3 **Experimental Approach to the Problem**

4

5 The study period was divided into a 6-week mesocycle of progressive training
6 followed by a 2-week tapering period. During the study period, 3 training sessions
7 and one match per week were completed by the players. All the team performed
8 plyometric and COD training, as well as small-sided games during the training
9 sessions. Following the 6-week mesocycle, participants were randomly divided
10 into experimental group (EG), which followed the taper, and control group (CG),
11 which continued with regular training. During the taper, TL was decreased by
12 reducing the duration of each training session. A battery of tests that included
13 muscle power, COD, acceleration and a stress/recovery questionnaire was
14 performed before the progressive training period, at the end of this 6-week
15 training period, which was used as baseline evaluation for the tapering period
16 (pre-tapering, PRE-TP), and at the end of the taper (post-tapering, POST-TP).
17 Internal training load (ITL) was also evaluated after every training session.
18 Participants were well familiarized with the standard technique of each exercise.

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1 ***Subjects***

2 Twenty-two male amateur soccer players from the same team volunteered to take
3 part in the study (age: 23 ± 5 years; body mass: 74.5 ± 7 kg; height: 1.77 ± 5 m;
4 experience as federated players: 11 ± 5 years). All participants were informed of
5 the benefits and risks of the investigation and gave written informed consent prior
6 to participation in the study. The research project was approved by the EUSES-
7 TE Institutional Review Board.

9 **Procedures**

10

11 ***Training intervention***

12

13 Plyometric training sessions were performed twice a week after the warm-up, with
14 48-72h of rest between them. The design of the plyometric intervention was
15 progressed based on the players' previous training records. Before beginning the
16 training period, players were instructed on how to perform all the exercises.
17 Horizontal and vertical jumps (with only left, only right or both legs) were
18 performed with involvement of stretch-shortening cycle muscle activity and
19 immediately after the jumps, a COD drill was performed (changing running
20 direction and starting-stopping quickly). The total number of contacts performed
21 in the first study session was 96 (including 48 foot contacts unilateral and 48
22 bilateral distributed in 4 sets) and the starting jump height was 60cm for vertical
23 jumps and 120cm for horizontal jumps. Training volume (number of foot
24 contacts) was increased 10% every 3 successive training session by augmenting

1 the number of jumps, repetitions or sets. After that, the intensity was increased
2 5% by augmenting the height of vertical jumps and the distance of horizontal
3 jumps, according to previous height or distance measured for each participant.
4 Each exercise set of repetitions lasted between 8-12 seconds. A complete recovery
5 between sets was allowed, following a ratio load:recovery of 1:6 (1), so that
6 recovery lasted between 50s and 70s. The order of the tasks was based on exercise
7 complexity, from more to less intense jumps.

8
9 Small Sided Games for the sport-specific training were performed in the three
10 training sessions completed per week. In alternate weeks, volume and intensity of
11 the exercises were increased. Volume was modified firstly by increasing the
12 duration of each task or the number of tasks per session performed. Then,
13 intensity was progressed by allowing lower number of ball contacts per player or
14 by decreasing the playing area (30).

15
16 A step tapering period lasting 2 weeks was applied to the EG following
17 the 6-week mesocycle. They continued training at the same intensity but training
18 volume was reduced 50% by lowering time spent in each specific training
19 modality, thus total session duration was reduced. Training frequency was
20 maintained. The CG continued training with the same volume and intensity
21 performed the 6th week of the training mesocycle.

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24

1 **Measurements**

2

3 *Internal Training Load*

4

5 ITL was calculated using the method developed by Foster (15). Briefly, thirty-
6 minutes after completing the training session each athlete provided a rating of
7 perceived exertion (RPE; CR-10 scale) for each session by answering the
8 question: “How was your workout?” The session RPE method has been shown to
9 be a valid method for monitoring training load in soccer players (20). An ITL was
10 calculated by multiplying the session RPE score (indicator of global intensity) by
11 training duration (in minutes). Data from all training sessions were combined to
12 provide an absolute ITL score for each week of training.

13

14 *Recovery-Stress State*

15

16 The Spanish version of the Recovery-Stress Questionnaire for Athletes (RESTQ-
17 76) was used to identify the physical and mental stress experienced by the players
18 and their current state of recovery (17). RESTQ-76 is composed by 12 General
19 Stress and Recovery scales along with 7 Sport-specific Stress and Recovery
20 scales. A Likert-type scale, with values ranging from 0 (*never*) to 6 (*always*),
21 indicates how often the athlete participated in various activities during the past
22 three days and nights. Total stress state was calculated as the sum of the subscale
23 scores representing stress (stress subscales), and total recovery state was assessed
24 by the sum of the subscale scores representing recovery (recovery subscales). The

1 test retest reliability of RESTQ-76 Sport has been previously reported ($r = 0.51$ –
2 0.81) (21). The questionnaire was completed 3 times: before the 6-week training
3 mesocycle, PRE-TP and POST-TP. A high mean score in the stress-associated
4 activity scales represents intense subjective strain whereas high mean scores in the
5 recovery-orientated scale represent adequate recovery.

6

7 *Performance tests*

8

9 All tests were conducted 48 hours following a competition or hard physical
10 training to minimize the influence of fatigue on test performance. Participants
11 performed three trials of each test, with 5 minutes of rest between trials and tests.
12 The best performance was considered for data analyses.

13

14 Lower-limb muscle power was evaluated by a countermovement jump (CMJ).
15 Following a regular 10-minute warm up, the CMJs were performed on a contact
16 mat (ChronoJump-Boscosystem platform) validated by DeBlas (4). Participants
17 started from a standing position with hands on their hips and were instructed to
18 perform a fast-downward movement up to 90° of knee flexion followed by an
19 upward movement trying to jump as high as possible. The trial reporting
20 maximum jump power was selected for further analysis (CMJ ICC = 0.94).

21

22 The Illinois COD Test (Figure 1) was set up and administered using according to
23 Hoffman (2006). The test is set up with four cones forming a square for the COD
24 test area (10 m x 5 m). Participants started on the ground in a prone position, with
25 their head just behind the start line and hands shoulder-width apart. On the “Go”

1 command, they got up and sprinted 10 m, touched the cone opposite the start line.
2 Then, they turned back and sprinted down to the cones placed at the middle of the
3 course. Next, they swerved in and out through four middle cones and once done,
4 sprinted to the top right hand corner cone, ran around the cone and finally sprinted
5 to finish the COD course. COD outcomes were recorded using photocell
6 chronometric devices (Chorno-jump Bosco System). The infrared timing gates
7 were positioned at the start and the finish lines at a height of 1 m. This test has
8 been reported to be a highly reliable and valid measure of a general athletic ability
9 to change direction (37) (COD ICC = 0.91).

10

11 ****Figure 1 near here****

12

13 Running acceleration was assessed by a 10-m test. The time in sprinting 10 m as
14 fast as possible was recorded using photocell chronometric devices (Chorno-jump
15 Bosco System). The test began from a static starting position with the toe of the
16 preferred forward foot behind the starting line. The photocells were positioned in
17 a straight direction and timing started when the first photocell was crossed. Time
18 was measured to the nearest 0.01 s. (Sprint ICC = 0.88).

19

20 **Statistical analyses**

21

22 The assumption of normality was verified using the Shapiro-Wilk test. The paired
23 sample T-test was used to evaluate changes between pre-training and post-training
24 in all the players. The independent samples T-test was used to examine between
25 group differences in the baseline measurements of interest. The analysis of

1 variance (ANOVA) with two-way repeated measures for time (pre-tapering and
2 post-tapering) and group (experimental and control) was performed to assess the
3 tapering intervention. Whenever a significant group x time interaction was
4 observed, Bonferroni's post hoc correction was used to aid interpretation of these
5 interactions. Cohen's d was calculated to evaluate the effect size (ES) of the
6 intervention within the groups with the following interpretation: small (0.2),
7 medium (0.5) and large (0.8) (8), whilst analyses for between-groups differences
8 were calculated using partial eta-squared (η^2_p) where < 0.01 = small; 0.06 =
9 moderate; 0.14 = large. All values are reported as mean \pm SD. The delta
10 percentage was calculated through the standard formula: Change (%) = [(posttest
11 score - pretest score) / pretest score] \cdot 100. The level of significance was set at $p <$
12 0.05 . All statistical analyses were performed using IBM SPSS Statistics 22 (IBM
13 Corporation).

15 RESULTS

17 Baseline differences were not found between groups for all the variables analyzed.
18 All physical condition parameters significantly improved following the
19 progressive overload training period. Lower limb muscle power increased by
20 3.15% (pre vs. post: 957.3 ± 111.4 W/kg vs. 987.5 ± 110.1 W/kg; $p < 0.001$; ES =
21 0.3); acceleration time was reduced by 2.91% (pre vs. post: 1.77 ± 0.07 s vs. 1.72
22 ± 0.07 s; $p < 0.001$; ES = 0.7); and COD time test was reduced by 1.35% (pre vs.
23 post: 15.80 ± 0.41 s vs. 15.59 ± 0.40 s; $p < 0.001$; ES = 0.5).

24

1 Figure 2 shows the mean weekly ITL completed by the team during the
2 progressive overload training period as well as the ITL completed by the EG and
3 CG during the tapering period. During the training period ITL was progressively
4 increased every week compared to the previous measures ($p < 0.05$). A significant
5 time x group interaction was found for the ITL measures during the tapering
6 weeks ($F_{2,40} = 53.5$; $p < 0.001$; $\eta^2_p = 0.7$). The EG group in comparison with the
7 CG achieved a lower ITL during the tapering weeks ($p < 0.001$). The EG
8 significantly decreased the ITL in tapering weeks 1 and 2 in comparison to PRE-
9 TP measure (344.7 ± 24.4 and 372.45 ± 24.8 vs. 754.9 ± 58.7 , respectively; $p <$
10 0.001 ; ES = 8.0 and 7.5, respectively). However, the CG did not show significant
11 changes in ITL (749.7 ± 24.4 and 746.2 ± 24.8 vs. 754.9 ± 58.7 respectively; $p >$
12 0.05 ; ES = 0.1 and 0.2 respectively).

13
14 ****Figure 2 near here****

15
16 Table 1 shows the physical condition parameters evaluated before and
17 after tapering for both EG and CG. The between-groups analysis showed a
18 significant time x group interaction for the lower limb muscle power test ($F_{1,20} =$
19 7.1 ; $p < 0.01$; $\eta^2_p = 0.3$). The EG training group in comparison with the CG
20 showed increased lower limb muscle power following the tapering period ($p <$
21 0.01). The EG improved muscle power from PRE-TP to POST-TP by 5.3%
22 (1029.7 ± 108.5 W/kg vs. 1084.2 ± 110.9 W/kg respectively; $p < 0.01$; ES = 0.5).
23 However, CG muscle power did not show significant changes between PRE-TP
24 and POST-TP (945.3 ± 98.7 W/kg vs. 950.0 ± 113.3 W/kg respectively; $p > 0.05$;
25 ES = 0.04). Moreover, a significant time x group interaction was also found for

1 the acceleration test ($F_{1,20} = 5.8$; $p < 0.05$; $\eta^2_p = 0.2$) in the between-groups
2 analysis. The EG group in comparison with the CG performed a faster
3 acceleration test ($p < 0.05$). The EG decreased the time needed to complete the
4 acceleration test from PRE-TP to POST-TP by 2.8% (1.72 ± 0.09 s vs. 1.67 ± 0.07
5 s respectively; $p < 0.01$; ES = 0.6). However, the CG did not show significant
6 differences in acceleration test from PRE-TP to POST-TP (1.72 ± 0.06 s vs. 1.70
7 ± 0.06 s; $p > 0.05$; ES = 0.3). The COD test between-groups analysis did not show
8 a significant time x group interaction ($F_{1,20} = 3.4$; $p > 0.05$; $\eta^2_p = 0.1$). COD
9 remained unchanged for both EG (15.39 ± 0.35 s vs. 15.19 ± 0.16 s; $p > 0.05$; ES
10 = 0.6) and CG (15.78 ± 0.37 s vs. 15.72 ± 0.41 s; $p > 0.05$; ES = 0.1) from PRE-
11 TP to POST-TP respectively.

12

13 *****Table 1 near here*****

14

15 Total stress (Σ 10 stress subscales) and total recovery (Σ 9 recovery
16 subscales) were not significantly different from pre- to post-training period ($p >$
17 0.05). Total stress and total recovery pre-tapering vs. post-tapering are shown in
18 table 2. The between-groups analysis showed a significant time x group
19 interaction for total stress ($F_{1,20} = 8.4$; $p < 0.01$; $\eta^2_p = 0.3$). The EG in comparison
20 with the CG experienced a significant decrease in total stress following tapering
21 ($p < 0.01$). The EG significantly decreased total stress from PRE-TP to POST-TP
22 by 17% (1.9 ± 0.5 vs. 1.6 ± 0.5 respectively; $p < 0.01$; ES = 0.6) whereas the CG
23 did not show any significant modification in total stress (1.7 ± 0.5 vs. 1.9 ± 0.4
24 respectively; $p > 0.05$; ES = 0.4). The between-groups analysis showed a
25 significant time x group interaction for total recovery ($F_{1,20} = 14.4$; $p < 0.001$; η^2_p

1 = 0.4). The EG in comparison with the CG showed higher total recovery after the
2 taper ($p < 0.001$). The EG did not show significant differences in total recovery
3 from PRE-TP to POST-TP (3.2 ± 0.2 vs. 3.3 ± 0.3 respectively; $p > 0.05$; ES =
4 0.4). However, the control group reported lower levels of recovery after tapering
5 (3.4 ± 0.3 vs. 3.0 ± 0.3 respectively; $p < 0.01$; ES = 1.1).

6

7 *****Table 2 near here*****

8

9 **DISCUSSION**

10

11 Our study provides singular data about the effect of decreasing TL during a
12 tapering period on physical condition compared with regular training in amateur
13 soccer players. We found that two weeks of tapering, characterized by decreasing
14 the duration of training sessions while maintaining intensity, improved lower limb
15 muscle power and acceleration capacities while lowered stress state in the
16 experimental group compared to the control group. However, changes in COD or
17 in recovery state were not observed.

18

19 TL was progressively increased during 6-week period by alternating
20 increases in training duration and intensity. However, this progression did not
21 reduce muscle performance at the end of the training period. ITL was found to
22 decrease in line with the pre-programmed tapering phase, which corroborates its
23 usefulness to quantify TL during a periodized program and reflects the decrease in
24 training volume in the tapering group.

1

2 Our results are in agreement with previous research reporting
3 improvements in anaerobic performance evaluated by muscle power and
4 acceleration variables in team (10,28) and individual sports (7,39) following a
5 tapering period. The magnitude of the improvements are in line with previous
6 studies evaluating muscle or acceleration capacities (10,28). Despite the fact that a
7 positive effect of tapering on COD has been reported previously (28), our results
8 showed a tendency to improve but it did not reach statistical significance ($p =$
9 0.08). This fact could be due to a major dependence of technical and coordinative
10 abilities not influenced by the characteristics of the tapering period applied.

11

12 Tapering has been suggested to increase muscle performance by reducing
13 muscle damage (10), increasing neural drive (18) and increasing cross-section
14 area (CSA) in type IIA muscle fibers (39). These adaptations might be obviously
15 related to the type of training performed previously and during tapering. Since
16 muscle power and acceleration are determinant physical capabilities for quick and
17 high-intensity actions over short distances common in soccer (6,26), its
18 optimization before an important competition could positively influence the
19 outcomes.

20

21 Accelerations and vertical jumping are common match actions in soccer
22 which are involved in goal scoring, creating space and gaining ball possession
23 (12,13). Power production capacity is one of the most important neuromuscular
24 capacities involved in these soccer explosive abilities and overall performance

1 (3,23). In addition, soccer players with greater muscle power usually experience
2 lower performance decrements in a match (33) and that may also have important
3 consequences on fatigue development and injury risk during games. Therefore,
4 maximizing lower-limb muscle power and running acceleration capacities
5 following a tapering period may positively influence technical and tactical aspects
6 of the match.

7
8 We also found out that the perception of stress evaluated by the RESTQ-
9 76 in the experimental group was significantly reduced following the tapering
10 period in comparison to the control group, who felt less recovered at the same
11 time point. This psychological improvement following a tapering period could
12 also influence the enhancement in physical condition reported. Our results are in
13 accordance with previous studies showing reductions in training stress following a
14 tapering period in team sports (11,28). High training load and psychological stress
15 have been related to increased risk of injury and illness in athletes (32,35).
16 Therefore, monitoring the individual stress-recovery state in athletes could be
17 implemented as a useful prevention tool.

18
19 Tapering is not a common practice in soccer; consequently, players could
20 initiate the competitive season with impaired neuromuscular performance due to
21 high volume trainings or reduced recovery (22,38). From a practical point of
22 view, our results support the importance of considering the taper in the
23 periodization of TL and recovery in order to improve fundamental physical
24 capacities for soccer, such as acceleration and power, and to prevent chronic

1 fatigue and illness. Scheduling training duration reductions while maintaining
2 intensity should be considered by strength and conditioning coaches when
3 designing their preseason training programs to optimize soccer players' physical
4 capacities and stress-recovery state at the onset of the competitive season (25).

5

6 The positive results from our study were obtained following general
7 tapering recommendations made from the meta-analyses of Bosquet et al. (5)
8 who, in terms of duration and variables modification, demonstrated that
9 performance may be maximized with a 2-week tapering period consisting in an
10 exponential reduction of training volume (approximately 41%–60%) without
11 changing training intensity or frequency. However, a step-taper was implemented
12 to accentuate the results due to the short duration of the study (29). Despite other
13 tapering strategies also being helpful to improve soccer performance (14), we
14 think that the approach used in our study is feasible in terms of time planning and
15 appropriate to induce physical adaptations. The inclusion of a control group
16 permitted the isolation of the intervention effects from the general outcomes
17 expected as consequence of the regular training. Nevertheless, the results could be
18 influenced by the fact that control group maintained training load during the
19 tapering period while the experimental group decreased it.

20

21 The main limitation of our study was that only physical condition
22 improvements and stress-fatigue parameters were analyzed. Given the complexity
23 of a soccer match, the improvements reported do not guarantee transference to
24 match success after tapering since physical condition is not the only aspect

1 important for it. Numerous factors such as tactics or motivation, which are not
2 necessarily influenced by training periodization, could influence better final
3 results in soccer matches. More studies are needed to further investigate the
4 effects of tapering on other relevant aspects influencing a soccer match such as
5 technical and tactical abilities or mental fatigue. In order to evaluate which is the
6 most useful tapering strategy, it would be also interesting to assess the effect of
7 different tapering modalities in terms of shorter or longer duration, amount of
8 intensity reductions or number of training variables modified.

9

10 **PRACTICAL APPLICATIONS**

11

12 The results of our study suggest that tapering can be a useful periodization
13 strategy to be used by coaches in order to achieve players' peak physical
14 performance and to reduce stress at the onset of the competitive season. Coaches
15 should consider that two weeks of step-taper characterized by decreasing TL 50%
16 through reduction of training session duration while maintaining intensity can
17 improve lower-limbs muscle power and acceleration ability while reducing the
18 perception of stress. At a practical level, these improvements may positively
19 influence soccer players' performance.

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1

2 **FIGURE LEGENDS**

3

4 **Figure 1.** Illustration of the Illinois COD test.

5

6 **Figure 2.** Internal Training Load during training and during tapering. Data
7 presented as mean \pm SE. #Significantly different to previous measures for the
8 whole team during the training period analyzed by paired t-test ($p < 0,05$).
9 *Significantly different results between and within groups compared to pre-
10 tapering measure at week 6 analyzed by two-way repeated measures ANOVA (p
11 < 0.001). TWK: training week; TPWK: tapering week; GC: control group; GE:
12 experimental group; AU- arbitrary units.

13

Table 1. Physical condition results of both groups at different time points.

	EG			CG			<i>p</i>	η^2_p
	PRE-TP	POST-TP	Δ EG%	PRE-TP	POST-TP	Δ CG%		
Power (W/kg) ^a	1029.71 ± 108.51 (964.47 – 1095.96)	1084.21 ± 110.87* (1013.71 – 1154.72)	5.4	945.31 ± 98.72 (880.07 – 1010.56)	949.99 ± 113.32 (879.49 – 1020.50)	0.4	< 0.01 [#] < 0.01*	0.26
Acceleration (s) ^b	1.72 ± 0.09 (1.67 – 1.76)	1.67 ± 0.07* (1.63 – 1.71)	-2.8	1.72 ± 0.06 (1.67 – 1.76)	1.70 ± 0.06 (1.66 – 1.74)	-0.9	< 0.05 [#] < 0.01*	0.23
COD (s) ^d	15.39 ± 0.35 (15.2 – 15.6)	15.19 ± 0.16 (15.0 – 15.4)	-1.4	15.78 ± 0.37 (15.5 – 16.0)	15.72 ± 0.41 (15.5 – 15.9)	-0.4	0.08	0.15

Data presented as mean ± SD; 95% confidence interval in brackets. [#]Significant interaction group x time from the between-groups analysis.

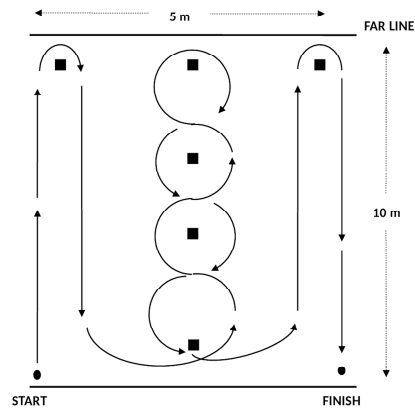
*Significant results within-subject pre/post taper period (*p* < 0.05). COD: change of direction; GC: control group; GE: experimental group;

PRE-TP: pre-tapering; POST-TP: post-tapering; η^2_p : partial eta-squared.

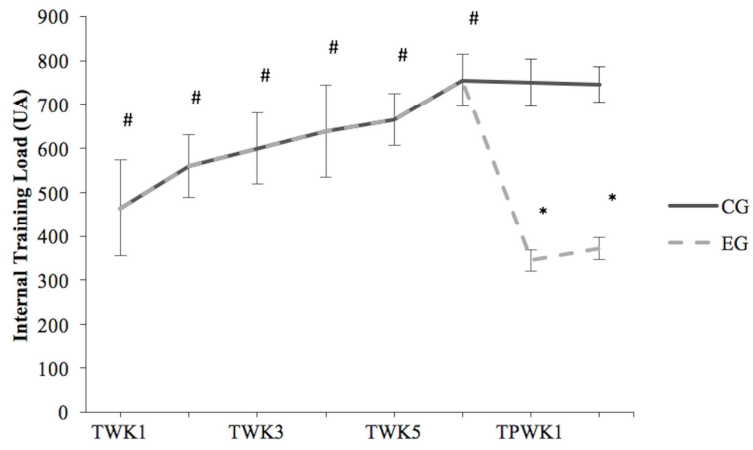
Table 2. REST-Q recovery-stress results of both groups at different time points.

	EG			CG			<i>p</i>	η^2_p
	PRE-TP	POST-TP	$\Delta\%$	PRE-TP	POST-TP	$\Delta\%$		
Total Stress	1.9 ± 0.5 (1.6 – 2.1)	1.6 ± 0.5 * (1.3 – 1.9)	-17	1.7 ± 0.5 (1.4 – 2.1)	1.8 ± 0.4 (1.5 – 2.1)	10	< 0.01 [#]	0.3
Total Recovery	3.2 ± 0.2 (3.0 – 3.4)	3.3 ± 0.3 (3.1 – 3.5)	4	3.4 ± 0.4 (3.2 – 3.6)	3.0 ± 0.3* (2.9 – 3.3)	-10	< 0.01* < 0.001 [#]	0.4

Data presented as mean ± SD and 95% confidence interval in brackets. [#]Significant interaction group x time from the between-groups analysis. *Significant results within-subject pre/post taper period ($p < 0.05$). GC: control group; GE: experimental group; PRE-TP: pre-tapering; POST-TP: post-tapering. η^2_p : partial eta-squared



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