Continuum zone repetition for training zone priority on load and repetition manipulation: A practical approach in advanced resistance training periodization

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ABSTRACT:

Resistance training periodization for load and repetition manipulations depend on continuum zone repetition, with respect to linear loading and nonlinear repetition in advanced status within exercise condition. Moreover, periodic loading and repetition multiple sets are planned using one or more training volume strategies by training zones. Another way this condition is well known that each training zone has implemented modified load and repetition selection planned for daily programming. The properly weekly periodization is an advanced resistance training approach to improve and maximize performance in Olympic branches, in addition to athletes organizing to achieve maximum strength exactely during (3-week) program. In this direction, it has been reported that continuum zone repetition can alter loading settings during exercise selection, enhancing athletic performance level and strength condition through nonlinear periodization. The aim is to provide a practical approach, considering that these are regulated training routines according to exercise selection to change training volume in sport science practice. These improvements suggest that observed linear

weekly performance, such as ultimately increased load and decreased repetition, occurs in terms of manipulation on the equated load and repetition training zone priorities. A practical approach showed that continuum zone repetition resistance training zone elevates further strength gains in athlete development. The potentiated resistance zone regimes can be optimized for development of high exercise performance thus, the performance level of athletes has no limitations from previously traditional manipulations used to detect potential strength performance status. Therefore, advanced resistance training periodization is highly important to enhance resistance training periodization.

Keywords: Continuum zone repetition, load, repetition, strength, and exercise condition.

1. Introduction

Resistance training and strength condition are defined as exercise and individual exercise and physical performance level (Faigenbaum et al., 2009). In that, exercise and physical performance status are regulated by one or more ways to strength and endurance gains (Hugges, Ellefsen and Baar, 2018) that have been detected on resistance training zone regimes to increase high strength condition (Lopez et al., 2020). Moreover, advanced resistance training rather than (Fonseca et al., 2023), continuum zone repetition periodization has modified load and repetition manipulations in terms of repetition continuum sequencing without traditional (Schoenfeld et al., 2021). It is the working principle that greater exercise and strength development determine load and repetition changes to regulate incrementally athletic performance level (Ebben et al., 2004). In direct terms, advanced resistance training zone priority on load and repetition is integrated into exercise and strength adaptation and regulation according to training manipulation strategies (De Camargo et al., 2022). Load and repetition explain resistance training outcomes, consisting of intensity, volume, rest interval, and set session during multiple resistance training periodization (Kreamer and Ratamess, 2004). It is well known that potential acquisitions were realized repetition continuum can be important at advanced training volume maintaining multiple set set-ups setting on resistance training zone working principle (Schoenfeld et al., 2016; Aycan et al., 2023). Load and repetition manipulations have been appeared on previously nontraditional resistance training programs (Schoenfeld et al., 2017; Kahraman & Varol, 2024) whereas repetition continuum, by organize working principle to achieving strength and local muscular endurance level in trained population (Kahraman et al., 2024). Another topic, resistance training zone selection permitted for preferring load and repetition manipulation (Campos et al., 2002), in addition actually primer load changes of training volume improve continuum blocks are complex performance; strength, hypertrophy and endurance setted on weekly periodization by alter ultimately performance in single and multi joint body exercise condition (Schoenfeld et al., 2021; Kahraman et al., 2024; Schoenfeld et al., 2016). Resistance training goals help to individual performance level in competitive training sequences involve optimal strength, hypertrophy and local muscular endurance, including specifically squat, bench press and deadlift exercises on Olympic sports such as weightlift and trained resistance men etc (Kahraman & Varol, 2024; Kahraman et al., 2024; Aycan, Kılıç and Kahraman, 2023). However, planned traditional resistance training manipulations enable linear or nonlinear versus continuum zone repetition have been implemented nonlinear

repetition during short term periodization to frequent increase undergoing long term performance (Fleck, 2011; Kahraman, 2023; Kahraman & Varol, 2024), furthermore periodic zone diversities led to better strength and endurance gains (Aycan et al., 2023). Unlikely, traditional resistance training programs have been designed at 8-12RM and 8-10 resistance exercises compared to maintain program refers to high maximum performance on elevated complex muscular adaptation depends upon individual training status during short periods (Kreamer and Ratamess, 2004; ACSM, 2009; Kahraman et al., 2024). Traditional resistance training periodization considering that increased repetitions improve endurance more than reduced load repetitions enhance high strength gains (Schoenfeld et al., 2015; Schoenfeld et al., 2021). Subsequently, current approach noted load and repetition manipulations were organized on strength and endurance performance level adjusted for ultimately strength performance to combine low load high repetition and high load low repetition (Kahraman & Varol, 2024). A practical approach noted that resistance training zone regimes may be daily nonlinear repetition manipulations regulate multiple set sessions setting principle accompanied for resistance training plan and programs, therefore, advanced resistance training periodization reported that weekly strength-hypertrophy-endurance zone regimes are advance resistance training status in reason to continuum zone repetition is optimal strength characteristics used to one or more exercise selection on professional athlete development and achieving high strength performance level. Therefore, professional athletes implemented in continuum zone repetition resistance training periodization has modified low-moderate-high load and repetition strategies in strength performance gains to enhance change of modified load and repetition manipulation strategies should be future direction aimed to maintain long term strength adaptation in athlete development.

2. Methodology

Research design

The study is qualitative method, a practical approach noted to advanced resistance training continuum zone repetition non-linear periodization. The primer results has been determined on training zone priority such as strength zone, hypertrophy zone and endurance zone. An metodologic approaches has been used search literature related continuum zone repetition, repetition continuum, strength periodization. The research population formed Olympic branches for example, weightlifters, resistance trained men etc (Kahraman et al., 2024).

Defining of continuum zone repetition

Manipulated repetition changes consist of 1-6RM or 3-5RM indicate greater strength gains in traditional strategy (Dinyer et al., 2019; Lopez et al., 2021), considering that strength zone at 1-5RM according change of hypertrophy and endurance zone regimes have been supported from 10-20% very high strength improvements (Schoenfeld et al., 2016; Kahraman et al., 2024). Particularly strength zone principle has implemented high load without traditional 30-50% low load (Jenkins et al., 2017; Dinyer et al., 2019; Lopez et al., 2021), whereas 60-65% low load endurance zone, additionally high load 75-90% traditional (Mangine et al., 2015) oppose to respectively hypertrophy and strength zone regimes (Schoenfeld et al., 2021; Kahraman & Varol, 2024). These strategies noted to continuum zone repetition is combination of training zone, while 75% - 4 set can explain hypertrophic load, in addition 70% - 2 set can promote maximum strength along with local muscular endurance (Schoenfeld et al., 2016; Kahraman et al., 2024), when 75% training volume (Kahraman & Varol, 2024). Thus, resistance training zone regimes term of load and repetition changes enable each training zone working (Tan, 1999; Schoenfeld et al., 2021). According this program setted on exercise condition noted to load and repetition manipulation were performed on load increase

and reduce repetition (Shimano et al., 2006). Current programs enhance resistance training zone working principle, indeed strength-endurance continuum have been achieved strength and endurance gains rather than traditional rest interval etc manipulation (Ebben et al., 2004; Grgic et al., 2020), to altering strategies both as low load high repetition and high load low repetition (Schoenfeld et al., 2021; Kahraman & Varol, 2024). In directly strength zone at 1-5RM, hypertrophy zone 8-12RM (Schoenfeld et al., 2021) and endurance zone at +15RM (Kahraman et al., 2024) proper should be rest intervals and set rest intervals such as strength zone at 3-5 min rest interval, hypertrophy zone at 2 min rest interval and endurance zone at 1-2 min rest interval, furthermore set rest intervals between 3 and 5 min (Shoenfeld et al., 2016; Kahraman et al., 2024). Advanced resistance training has planned on weekly nonlinear periodization to maximize strength enhancement compared to traditional resistance program (Fleck, 2011; Kahraman, 2023; Kahraman et al., 2024). Resistance training improves strength load and repetition (Aycan et al., 2023) relate to multiple set set-ups setting on difference zone (Schoenfeld et al., 2021). By changed load and repetition promote greater strength blocks can be goal to resistance training manipulation (Lopez et al., 2020; Kahraman et al., 2024). Continuum zone repetition is advanced resistance training program by increased load and decreased repetition outcomes obtain periodical evaluation has been determination then before traditional strength-hypertrophy-endurance regimes (Scimago et al., 2006; Fisher et al., 2020). In addition, athletic performance level adjusted to resistance training zone has eliminated load lift performance during short term periodization (Schoenfeld et al., 2021; Kahraman et al., 2024), another contidition has planned on linear (load) and nonlinear (repetition) can be alter resistance settings in oder to further high level strength performmance (Fleck, 2011; Scoenfeld et al., 2016; Scoenfeld et al., 2021; Kahraman, 2023; Kahraman et al., 2024). In this direction, it condition may be load and repetition strategies rather than traditional strength-hypertophy-endurance regimes to alter maximize performance level in athletic population with respect load and repetition manipulations to change strength and endurance performance level based current load and repetition strategies. Advanced resistance training defined on regulations of load and repetition manipulations in Table 1.

Table 1. Continuum zone repetition program

Endurance zone	**Hypertrophy zone**	**Strength zone**
>60-<75% +15RM	>70-<80% 8-12RM	>80% 1-5RM
≥3 set	≥2 set	1-2 set
1-2 min rest interval	2 min rest interval	3-5 min rest interval
5 min inter set rest	5 min inter set rest	5 min inter set rest

Load and repetition manipulations

Traditional repetition manipulations modify on load and repetition ranges (De Camargo, et al., 2022), morover advanced resistance training implemented on load and repetition manipulation (Fonseca et al., 2023). Low load lifted was charactarizeted greater neuromuscular coordination, it recommended on advanced levels of resistance training periodization (Jenkins et al., 2017), reported that greater loads at 80-85% to produce further adaptation and accomplishment during advanced resistance training (Kreamer & Ratamess, 2004). It has been suggested that 6-12RM loads may provide at 12-15RM to greater strength gains, however, each

training zones are advance by 80-100% intensities (Kreamer & Ratamess, 2009). Low load lifted at 15-25RM has importantly to strength development in moderately trained individuals nedeed at least 80% load produces neural adaptation, along with these loads at 5-6RM in advanced lifters (ACSM, 2009; Schoenfeld et al., 2017). Previously progression was reported at 60% loads produce largest effect in novice individual whereas at 80% loads produce largest strength gains in trained individuals and at 85% loads were most effective to atheletes (ACSM, 2009). To detect performance of novice individuals at 60-70% and 8-12RM, in addition advanced individuals were at 80-100% for maximize performance (ACSM, 2009). Potentially, considering that advanced resistance training, it is continuum zone repetition strategies differ volume and performance level on athlete performance status while increased load can be perform on decreased repetition, strength zone was performed at 1-5RM for support high strength load ranges at 60-90% (Goto et al., 2004; Schoenfeld et al., 2016; Scoenfeld et al., 2017). It that is endurance zone at 60-65% based on the most of set sessions on precisly load and volume strategies should be change of repetition for increase strength and endurance (Fisher et al., 2020), according at 60-65% and 15-20RM preferred to working principle continuum zone load and repetition performance on training multiple set sessions with training zone selection (Kahraman et al., 2024). The resistance training zone selection has defined on strength zone, hypertrophy zone and endurance zone regimes, to detect principle single and multiple set set-up settings (Schoenfeld et al., 2016; Schoenfeld et al., 2017; Schoenfeld et al., 2021), when set increase and repetition range changes (Schoenfeld et al., 2016), in addition multiple set sessions were accomplished to modified training volume (Kahraman et al., 2024; Kahraman & Varol, 2024). For example, hypertrophy zone 75% load and repetition 8 or 12RM manipulations should be advanced strength-endurance continuum periodization undergoing modified training volume intensities (Kahraman & Varol, 2024), respectively resistance repetitions provide muscular strength adaptation and neural complex local muscular endurance (Compos et al., 2002; Kahraman et al., 2024) while mostly each training zone regimes change because of based on load and hypertrophic responses in athletes considering to the practical approach recommended that advanced application and training goals related strength-endurance continuum complex performances as hypertrophy zone 4 set 70-75%, between 2 set 8 to 12RM versus endurance zone 3 set 60-65%, with 2 set 15RM and 1 set 20RM performed on load and repetition responses, to combine maximize performance level (Kahraman et al., 2024; Kahraman & Varol, 2024). Multiple set sessions such as strength zone at 1 or 2 sets, hypertrophy zone at 3 or 4 sets and endurance zone at 3 set indicate greater strength and endurance gains (Schoenfeld et al., 2016; Kahraman et al., 2024). Another endurance zone at 3 set, hypertrophy zone at 2 set and strength zone at 1 set to maximize performance level of Olympic weightlifters was equated load and repetition volume between age 14 to 27 (Kahraman & Varol, 2024). Uncombined continuum zone repetition strategy such as can be strength zone regime used at 80% - 3 set, 85% - 3 set and 90% - 2 set load lifting tasks and repetition range manipulations at 1-5RM were increased in squat, bench press and deadlift strength and endurance condition (Aycan et al., 2023). Such as one model load and repetition manipulations given at the sequencing of weekly periodization in Fig 1.

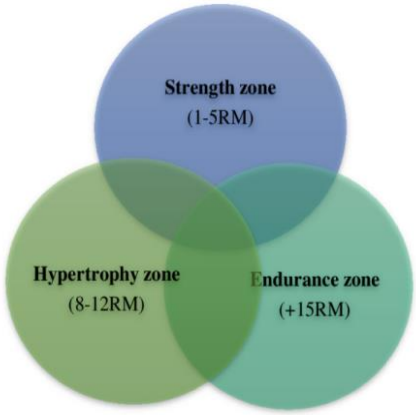

Fig 1. Continuum zone repetition resistance training consists of load and repetition regimes; included: (1) strength zone as high load and low repetition, (2) hypertrophy zone as moderate load and moderate repetition and (3) endurance zone as low load and high repetition (Schoenfeld et al., 2021).

Exercise selection

The practical approach of resistance training periodization accounted for performance and strength maximum level at different athletic levels; national, international, and professional (Aycan et al., 2023; Schoenfeld 2016; Kahraman et al., 2016). How are athletes provide truely exercise sessions? Actual resistance training performance level or status have detected on multiple exercise condition both single joint and multi joint exercises for predict on strength performance level (Brigatto et al., 2020). The resistance exercises combined or non combined to single and multi joint, have been shown to be increased muscular strength of targeted muscle groups using multiple set modalities such as free weight and machine etc (Gentil et al., 2015; Paoli et al., 2017; Brandao et al., 2020). Multi joint exercises such as bench press and squat require for neuromuscular adaptation and complex firing enable a greater magnitude of weight to be lifted, therefore, single joint exercises such as overhead press and bent-over row used to targeted specific muscle groups and reduced technical involvement (ACSM, 2009). Exercise condition was selected on sport branches given that muscular strength adaptation (Mannarino et al., 2019). In thus one or more exercise selections were determined on single and multi joint muscle performances (Brandao et al., 2020). Single joint exercises consist of overhead press, shoulder raise and bent-over row preferred to Olympic weight lift performance both upper compartment strength and muscle performance (Kahraman et al., 2024; Kahraman & Varol, 2024). Accordingly, lower compartment performance were performed on squat, back squat, deadlift, and countermovement jump shrug for further muscular strength condition (Schoenfeld et al., 2016; Kahraman et al., 2024). This strength condition plans can be select to upper and lower compartment maximum strength (Paoli et al., 2017), therefore, combination resistance training zones adjusted to exercise status and combination recommended that lower body exercises than upper body exercises have setted to forming of multiple set sessions (Gentil et al., 2015). Targeted goals in generally types of free weight and machine exercises may be choice single and multi joint effectively (Brigatto et al., 2020; Brandao et al., 2020), these exercises targeted muscle groups used to complex strength and local muscular endurance, have been formed to further muscular strength and skilled muscle work to response greater acute metabolic regulation (Kreamer & Ratamess, 2004). According to lower body strength should be detect combined exercise condition both single and multi joint (Goncalves et al., 2019). Primer outcomes of exercise sessions indicate strength performance level, in addition multi joint exercises are greater strength undergoing than

single joint exercises for muscular regulation and adaptation (Paoli et al., 2017). The practical approach noted that advanced programs can be single and multi joint exercises should implemented as combinated exercise condition, as can be detect athlete performance level (Kahraman et al., 2024).

Multiple set set-ups

Traditional sets consist for single and multiple sessions detect training volume and greater strength adaptations (Carpinelli & Otto, 1998), progressive multiple set was advanced resistance training strategy using at least 2 to 3 sets for each exercise condition programs (Krieger, 2009). Single set set-ups has completed on strength and hypertrophy adaptations (Hermann et al., 2025), continuum zone repetition can be plan on such strength set at 1 or 2 set, hypertrophy at 3 or 4 set and endurance set at 3 set for strength and local muscular performance level (Schoenfeld et al., 2016; Kahraman et al., 2024). Strength zone sessions can be change according single set sessions to load and repetition increase (Aycan et al., 2023), hypertrophy zone sessions promote strength and endurance responses (Kahraman et al., 2024) and endurance zone sessions determine load and repetition range based load and volume changes (Schoenfeld et al., 2016). Considering that strength set sessions promote load and repetition changes by single sets at 80-90% between 1 to 3 sets (Aycan et al., 2023; Kahraman et al., 2024). Subsequently, hypertrophy set set-ups were implemented in detection of training volume regulate load and repetition that is sets related to complex load lifting tasks at 3 or 4 set (Schoenfeld et al., 2016). Endurance sets were worked at 3 set particularly loading changes at 60-65% increasestrength and endurance load and repetition status (Kahraman et al., 2024). Currently, strength-endurance zone ranges are multiple setting set set-ups have formed advanced set sessions at 5 or 6 sets, included that strength-hypertrophy-endurance responses and neuromuscular adaptation (Schoenfeld et al., 2021; Kahraman & Varol, 2024).

Rest interval

The rest interval lenght may be select for maximize performance load lift efforts, have been manipulated on resistance training set sessions in regarding that achieved load lift tasks support maximum repetition (Kreamer & Ratamess; De Salles et al., 2009). The principle of training zones enable low-modarate-high rest intervals with metabolic and mechanic factors (Campos et al., 2002). The metabolic and mechanic stress factors were eleminated during low load 60% to high load >60% efforts (Schoenfeld et al., 2021). Manipulated actual set set-ups can explore on 1 and 3 min rest interval for strength and hypertrophy load lift tasks (Schoenfeld et al., 2015), furthermore 3 and 5 min rest interval promote reliable and safe condition for high load set sessions whereas 1 min rest intervals provide complex adaptation on the repeated high repetition and local muscular endurance (De Salles et al., 2009; Schoenfeld et al., 2016a). Multiple set sessions are combine strength activities such as strength-hypertrophy-endurance zone regimes evaluated on short rest intervals between 1 to 3 min support strength maximum and hypertrophy adaptation in a short time (De Camargo et al., 2022; Kahraman & Varol, 2024). Another condition, 1 min rest intervals follow higher load, but long rest intervals are complete to maximum repetition and training zone working principle undergo short rest interval 1 min and long rest interval >2 min that increased strength performance level on back squat vs squat and bench press vs overhead press, in order to training zone performance outcomes has been used multiple set setting between 1 to 5 set evaluated on high volume training (Schoenfeld et al., 2016; Kahraman et al., 2024; Kahraman & Varol, 2024). Such example, hypertrophy zone has been performed on 1 to 3 min rest intervals along with 3 to 4 set sessions (Schoenfeld et al., 2016; Kahraman et al., 2024; Kahraman & Varol, 2024).

Weekly periodization

The general traditional resistance training periodization have linear and nonlinear periodization (Fleck, 2011; Kahraman, 2023), thus as undulation plans were formed on load and repetition combination over weekly periodization (Kahraman & Varol, 2024). Continuum zone repetition periodization has arranged to without undulation linear plans (Kahraman, 2023), when continuum repetition changes according to linear zone load tasks and training volume change

(Schoenfeld et al., 2016; Kahraman et al., 2024). Nonlinear models enable high, moderate and low resistance variations both load and intensity differences may be systematical modified over resistance sequence such as 3-5RM high, 8-10RM modarate and 12-15RM low, may be used in rotation mostly using undulation model has been demonstrated performance enhancement (ACSM, 2009). Traditional resistance training periodization included in daily and weekly programs (Fleck, 2011), however continuum zone repetition performs on weekly nonlinear repetition periodization (Kahraman, 2023; Kahraman et al., 2024). Performance levels promote resistance training zone regime working permit nonlinear training volume (Schoenfeld et al., 2016; Schoenfeld et al., 2021). Programs provide load and repetition manipulations for maximize strength performance level promote strength and endurance gains should be modified repetition to improve neuromuscular strength adaptation (Schoenfeld et al., 2016; Kahraman et al., 2024). In this direction, daily repetition modified to weekly programs to select exercise condition and multiple set sessions indirectly has performed on strength-endurance continuum (Fisher et al., 2020; Schoenfeld et al., 2021. Combinated multiple sets may be perform on resistance training zone regimes; ie., 3 set endurance zone, 2 set hypertrophy zone and 1 set strength zone over short term (3 to 4 week) periodization (Kahraman et al., 2024) with long term (6 week) periodization (Schoenfeld et al., 2016). The weekly periodization was worked at 6 session seperately training days have evidence that altered training days (after 48 hour) limited to optimize resistance training performance (Kahraman & Varol, 2024). Actual resistance training zone regimes should be at least 2 to 3 days altering repetition change in recording of resistance training zone set set-ups alter as aimed working priciple that as 6 set and 6 session (Schoenfeld et al., 2016; Kahraman et al., 2024).

3. Conclusion

Advanced resistance training programs may be support to athletic development, in directive resistance plans are potential continuum zone repetition periodization, according to load and repetition manipulations can be very high strength performance level. A practical approach noted that continuum zone resistance training periodization is advanced resistance training strategy for Olympic sport branches promote athlete strength condition. Some popular training programs without, continuum zone repetition suggests to neuromuscular strength and endurance adaptations.

4. Practical application and future direction

Load and repetition manipulation strategies are current resistance training condition, therefore resistance training zone regimes support maximize strength, noted that continuum zone repetition resistance training periodization properly is advanced resistance training model on load and repetition selection to regulate strength and endurance performance level should be aimed long term periodization such as hypertrophic responses. Principle one or more resistance training zone working should be long term periodization. The reported that it performance has performed at generally 6 session and 3 to 4 weeks improve maximum strength and local muscular endurance, however, hypertrophic responses have not examined during short term periodization. According indicated that it advanced resistance training is current resistance condition and strength periodization.

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8. Author Declaration

- Study has original working.
- No conflicts of interest