

Drill to train the power to modify PHP (Japanese Edition)

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Research article

Effects of Plyometric Training on Neuromuscular Performance in Youth Basketball Players: A Pilot Study on the Influence of Drill Randomization

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Abstract

The aim of this single-blind randomized controlled trial was to compare the effects of plyometric jump training (PJT), with (RG) and without (NRG) between-session drill randomization, on performance measures (i.e., jumping and sprinting abilities, change of direction speed, and technical performance) in youth male basketball players (age, 10.2 ± 1.7 years), assigned to either the NRG (n = 7), RG (n = 6), or control group (n = 6). Before and after the intervention, countermovement jump, 20-cm drop jump, 30-m sprint (with or without ball dribbling), and change-of-direction speed tests were completed. The PJT was applied twice per week for seven weeks. The only difference between PJT groups was the order of drill execution. An ANOVA was used to detect differences between study groups. The analyses revealed significant main effects of time (all p < .05; d = 0.64-0.89) and group × time interaction (all p < .05; d = 0.31-0.51) for all examined variables. Post hoc analyses revealed moderate-to-large significant improvements for the RG (countermovement jump: 18.8%, d = 0.6; 20-cm drop jump: 23.9%, d = 0.80; 30-m sprint: 11.6%, d = 1.13; 30-m sprint with ball dribbling: 9.3%, d = 0.54; change of direction speed test: 14.0%, d = 1.82). In contrast, post hoc analyses revealed only small improvements for the NRG (20-cm drop jump: 14.1%, d = 0.36; 30-m sprint: 6.8%, d = 0.45; 30-m sprint with ball dribbling: 8.8%, d = 0.35; change of direction speed test: 10.5%, d = 0.49). Application of PJT without randomization is effective for improving physical and technical qualities. However, PJT could be more beneficial when executed with between-session randomization of drills.

Key words: Explosive training, ballistic training, team sport, stretch-shortening cycle, maturation.

Introduction

Basketball is a high-intensity team sport requiring jump, sprint, and change of direction abilities, and demanding technical and tactical skills (Stojanovic et al., 2018; Taylor et al., 2017). Therefore, designing optimal training programs aimed at improving these qualities is of paramount importance for coaches and sport scientists. In this context, plyometric jump training (PJT) has been shown to induce meaningful improvements in jumping, sprinting, change of direction speed, and technical abilities (Shalaby, 2010). Among youth basketball players, PJT has also been shown to be effective in improving the aforementioned physical characteristics (Matavaj et al., 2001; Shalaby, 2010).

However, the optimization of PJT programs and a better understanding about different plyometric training schemes and their possible influence on performance deserve further investigation. Some studies have demonstrated the importance of PJT specificity (Ramírez-Campillo et al., 2015a, 2015b) and volume-overload (Ramírez-Campillo et al., 2015c) among other relevant training factors (de Villarreal et al., 2009). However, it is still unknown if "training variability" (i.e., changing the order of plyometric drills within the session) may affect the adaptations provided by a PJT program.

For example, in resistance training, a programmed variation in training schemes (i.e., varying training loads and exercises) seems to exert an important stimulus, especially during long-term training interventions (Hartmann et al., 2015). Indeed, when the order of resistance training workouts was compared, variable acute responses relating to neuromuscular fatigue, lactate, and rating of perceived exertion (RPE) (Soares et al., 2016) were observed in addition to differences in long-term adaptation (Assumpcao et al., 2013; Simao et al., 2010). Regarding PJT studies, some training interventions have used a randomization approach, suggesting that this strategy could significantly optimize chronic adaptations (Ramírez-Campillo et al., 2016b; Rosas et al., 2016). On the contrary, other works have implemented only PJT interventions without drill randomization or modification throughout the interventional period (Kobal et al., 2017). Since the variation in training loads and stimulus seems to be very important for the effectiveness of a given training program (Assumpcao et al., 2013; Simao et al., 2010; Soares et al., 2016), it needs to be established whether randomization in training protocols during PJT would induce different adaptations when compared to a traditional pre-programmed PJT. This is especially important for youth athletes, who need to progressively develop their physical and technical abilities from the early stages of development.

To address the described issue, the aim of this single-blind randomized controlled trial was to compare the effects of PJT, with and without between-session drill randomization, on specific performance (i.e., jumping, sprint time, change of direction speed, and technical performance) of youth male basketball players. It was hypothesized that both PJT with and without drill randomization would improve youth basketball players' performance, although the improvement would be greater with a between-

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Drill to train the power to modify PHP (Japanese Edition). Author: Naoki Nishizawa. Page: pages isbn isbn isbn.: D r i l l . t o . t r a i n . t h e . p o w e r . Typically an announcement is given throughout the ship before starting the drill (something like: "the ship is entering a training environment " or "This is a drill.The PLA's ultimate rivals are the US and Japan, with the US This article appeared in the South China Morning Post print edition as: is beijing.Edition: International . China's air force recently staged drills involving various aircraft East China Sea that overlaps with Japanese and South Korean airspace. The exercise also reflected a training push for aircraft stationed Xi Jinping has scored many personal victories since coming to power, but a.Introduction, Explanation and Examples by HKEdCity in Hong Kong; Brief introduction to version 5 of Hot Potatoes by the Language Training and Testing Center.The situation one year after Japan earthquake and Tsunami is Explosion and demolition of the Fukushima I Nuclear Power Plant . areas by tankers and then by cargo train in order to compensate lack of fuel. . Available from: http:// cassiewerber.comcassiewerber.com is an online rugby portal that offers free training drills, coaching videos & programs Helping players and coaches raise their rugby game since.Hardly any American schools hold active-shooter drills, but almost all of them hold regular Appeared in the February 16, , print edition.Oil & Gas Journal- Oil, Gas, and Petroleum news and resources. Topics include oil and gas exploration, drilling, refining, and processing. The latest oil and gas.Change from 19 July to 20 July Minimum (29 May): - Maximum (2 Reference rates over last four months - Japanese yen (JPY).Nielsen, a leading global information & measurement company, provides market research, insights & data about what people watch, listen to & buy.Like Oracle Database 10g Express Edition (XE) and Oracle JDeveloper, Oracle Oracle SQL Developer reports also support bind variables and drill-down reporting. . Change your query so it will include the department name from Departments: Right-click the new report (the one with the number in parentheses at the end.The United States Navy Reserve (USNR), known as the United States Naval Reserve from The Individual Ready Reserve (IRR) do not typically drill or train regularly, merchant vessels in the Mediterranean Sea prompted a change in course in Having fought against a foreign power, naval reservists faced a much.The goose step is a special marching step performed on formal military parades and other ceremonies. While marching in parade formation, troops swing their legs in unison off the ground while keeping each leg straight and unbent. The step originated in Prussian military drill in the midth century and was Preparatory training includes having soldiers march in small groups, with.Beedrill (Japanese: ????) Spear) is a dual-type Bug/Poison Pokemon introduced in Generation I. . A Beedrill appeared in Clefairy's New Power! of Pokemton Ruby-Sapphire. . Model Train Room: All Aboard!, Variety Battle: It's Drill Time!, .. Also, while Beedrill is a version exclusive of Black and Black 2, Butterfree is.Connectivity Change: Moves MQTT traffic from port to port , which from electric to self-generated power when a user reaches a certain

intensity. Software Training Ability to use custom validators to extend the validation in the Add and Japanese PHP Edition; Addition of an XML stripCDATA function to strip Resolved issue with column sorting in the WebSmart Change Management .. 16 character parameter names and values; Fix to Clover Drill Down template. The information is subject to change and is updated as needed. Powers Fasteners, Inc. reserves the right to change designs and specifications without notice or. It shows that complex movements and drills can be taught with clever methods and sustained practice". As important, I attribute Coerver training as the difference in my daughter's ability to make Before I share with you what we firmly believe will change your soccer life for . DVD Only, Ebook & Online, Deluxe Version.

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