

Věda a sport

Metody pro hodnocení vědy a vědce

- **Ing. Tomáš Vodička, Ph.D.**
- Katedra kineziologie D33/339
- tvodicka@fsps.muni.cz

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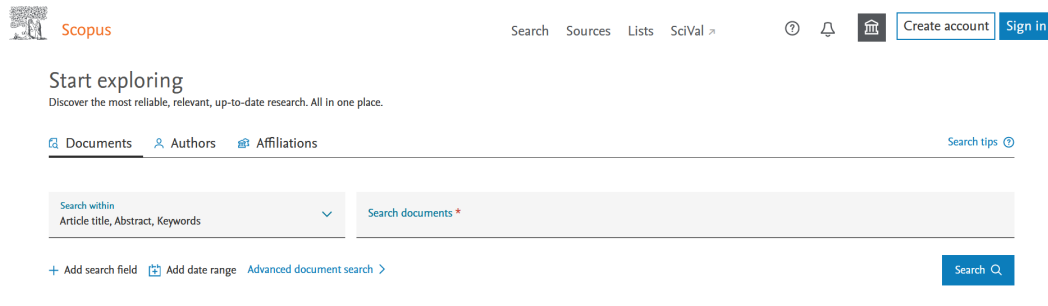
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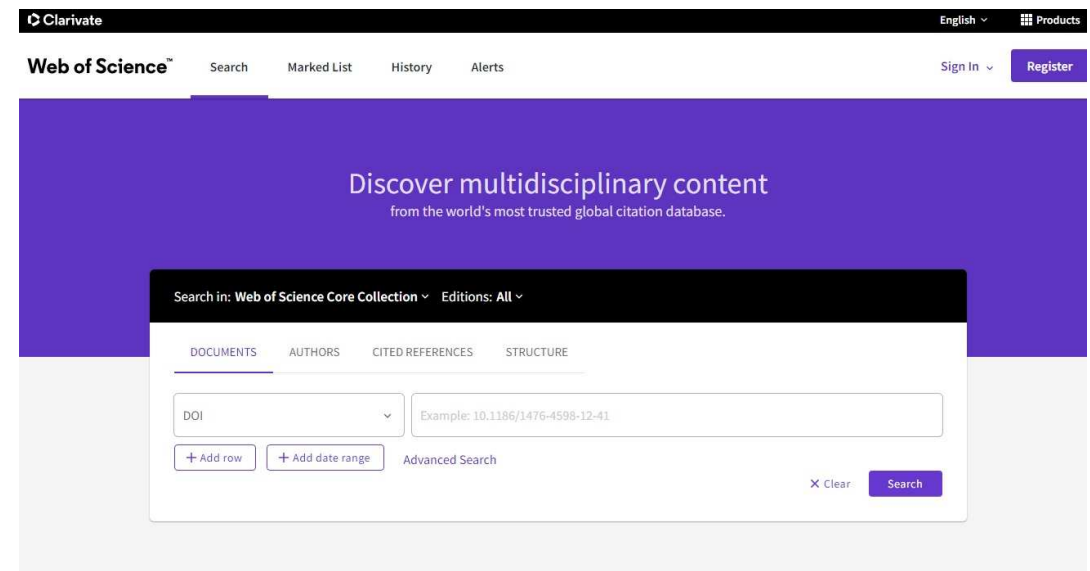
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4	CHEMICAL REVIEWS	0009-2665	47.928
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9	NATURE REVIEWS GENETICS	1471-0056	40.282
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11	NATURE REVIEWS IMMUNOLOGY	1474-1733	39.932
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18	REVIEWS OF MODERN PHYSICS	0034-6861	36.917
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87	CELL RESEARCH	1001-0602	15.606
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1	International Review of Sport and Exercise Psychology	journal	4.975 Q1	38	37	33	3776	614	33	19.78	102.05	
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3	Sports Medicine	journal	4.092 Q1	184	152	563	11242	5291	478	8.28	73.96	
4	American Journal of Sports Medicine	journal	3.021 Q1	221	464	1301	16320	7409	1155	5.04	35.17	
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Metody hodnocení vědce

Hirschův index; H-index

- Index citačního ohlasu vědeckých článků publikovaných jedním vědeckým pracovníkem. Hodnotí dopad práce vědce na oblast jeho činnosti.



- H-index je udáván číslem h , které je množstvím prací, jež byly nejméně h krát citovány.
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H-index

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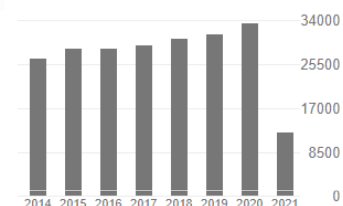
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ZALOŽIT SI VLASTNÍ PROFIL

NÁZEV	CITACE	ROK
Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication RC Kessler, P Berglund, O Demler, R Jin, KR Merikangas, EE Walters Archives of general psychiatry 62 (6), 593-602	28501 *	2005
Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results from the National Comorbidity Survey RC Kessler, KA McGonagle, S Zhao, CB Nelson, M Hughes, S Eshleman, ... Archives of general psychiatry 51 (1), 8-19	17487	1994
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Trends in alternative medicine use in the United States, 1990-1997: results of a follow-up national survey DM Eisenberg, RB Davis, SL Ettner, S Appel, S Wilkey, M Van Rompay, ... Jama 280 (18), 1569-1575	9508	1998
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Unconventional medicine in the United States--prevalence, costs, and patterns of use DM Eisenberg, RC Kessler, C Foster, FE Norlock, DR Calkins, ... New England Journal of Medicine 328 (4), 246-252	6288	1993

Citace	ZOBRAZIT VŠECHNY	
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Hodnocení vědeckých článků a autorů dle WoS

„Černošští profesionální fotbalisté mají vyšší míru nedostatku vitamínu D než bělošští hráči. Dále, profesionální fotbalisté s vyšší hladinou vitamínu D měli větší pravděpodobnost, že získají smluvní pozici v National Football League. Profesionální fotbalisté s nedostatkem vitamínu D mohou být více ohroženi zlomeninami kostí.“

Vitamin D Profile in National Football League Players

Joseph C. Maroon,* MD, Christina M. Mathyssek,* PhD, Jeffrey W. Bost,*† PA-C, Austin Amos,* BA, Robert Winkelman,* BA, Anthony P. Yates,† MD, Mark A. Duca,‡ MD, and John A. Norwig,§ Med, ATC
Investigation performed at the Department of Neurosurgery, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, USA

Background: By maintaining phosphate and calcium homeostasis, vitamin D is critical for bone health and possibly physical performance. Hence, vitamin D is important to athletes. Few studies have investigated vitamin D levels in relation to fractures and performance in athletes, and no published study has included a multiracial sample of professional American football players.

Purpose: To assess vitamin D levels, including the prevalence of vitamin D deficiency/insufficiency, in professional American football players and to evaluate the association of vitamin D levels with race, fracture history, and the ability to obtain a contract position, which may be a marker for athletic performance.

Study Design: Cohort study; Level of evidence, 3.

Methods: Serum vitamin D levels of 80 professional football players from a single team in the National Football League were obtained during the 2011 off-season (mean age, 26.5 ± 3.7 years; black, n = 67 [84%]). These levels were used to compare injury reports from the 2011-2012 and 2012-2013 seasons. Statistical analyses were performed to test if vitamin D levels were related to race, fracture history, and the ability to obtain a contract position.

Results: Mean vitamin D level was 27.4 ± 11.7 ng/mL, with significantly lower levels for black players (25.6 ± 11.3 ng/mL) versus white players (37.4 ± 8.6 ng/mL; $F_{1,78} = 13.00$, $P = .001$). All athletes who were vitamin D deficient were black. When controlling for number of professional years played, vitamin D levels were significantly lower in players with at least 1 bone fracture when compared with no fractures. Players who were released during the preseason because of either injury or poor performance had significantly lower vitamin D levels than did players who played in the regular season.

Conclusion: Black professional football players have a higher rate of vitamin D deficiency than do white players. Furthermore, professional football players with higher vitamin D levels were more likely to obtain a contract position in the National Football League. Professional football players deficient in vitamin D levels may be at greater risk of bone fractures.

Keywords: football; injury prevention; vitamin D; 25-hydroxyvitamin D; athletic training

Vitamin D deficiency is epidemic, with an estimated 1 billion people worldwide affected.¹⁷ The general health consequences of low vitamin D levels are well established in the general population and have wide-ranging adverse health

effects that involve every organ system. Both deficient and insufficient vitamin D levels have been associated with a greater rate of cardiac morbidity and mortality.^{7,27,30} Vitamin D levels <20 ng/mL are associated with a risk increase of 30% to 50% for developing colon, prostate, and breast cancer, as well as with an increased mortality from these cancers.^{11,13} Increased rates of depression,³⁶ suicide rates,³⁶ and many autoimmune diseases—including type I diabetes,³⁰ multiple sclerosis,^{31,32,35} and rheumatoid arthritis³⁴—are also associated with low vitamin D levels. In addition, the consequences of vitamin D deficiency as it pertains to bone health and muscle function are widely recognized.

Despite this knowledge, vitamin D levels have not been widely assessed in team sport athletics such as football. Elite athletes of high-impact sports, such as professional football players, who put extreme demands on their musculoskeletal system, require optimal musculoskeletal functioning. Yet, the role of team athletic trainers and physicians for determining vitamin D levels and the need for supplementation

*Address correspondence to Jeffrey W. Bost, PA-C, Department of Neurosurgery, University of Pittsburgh Medical Center, 200 Lothrop Street, Suite 5C, Pittsburgh, PA 15213, USA (e-mail: bostj@upmc.edu).

†Department of Neurosurgery, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, USA.

‡University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania, USA.

§Pittsburgh Steelers Football Club, Pittsburgh, Pennsylvania, USA.

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Autor dle WoS

Maroon, Joseph C. *This is an algorithmically generated author record* ⓘ

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„Pacienti s nízkoenergetickou zlomeninou nohy nebo kotníku byli obzvláště ohroženi nízkou hladinou vitamínu D, zejména pokud kouřili, byli obézní nebo měli jiné zdravotní rizikové faktory. Vzhledem k tomu, že se ukázalo, že suplementace vitamínem D snižuje riziko zlomenin a zlepšuje hojení zlomenin, měla by být sledována hladina 25-OH vitamínu D a přistoupit k případné suplementaci u pacientů se zlomeninami.“

Prevalence of Vitamin D Deficiency in Patients With Foot and Ankle Injuries

Jeremy T. Smith, MD¹, Kareem Halim, AB¹, David A. Palms, AB¹, Kanu Okike, MD, MPH², Eric M. Bluman, MD, PhD¹, and Christopher P. Chiodo, MD¹

Abstract

Background: Vitamin D deficiency has been identified as one of the most common causes of fragility fractures and poor fracture healing. Although rates of vitamin D deficiency have been delineated in various orthopaedic populations, little is known about the prevalence of vitamin D deficiency in patients with foot and ankle disorders. The goal of this study was to identify the prevalence of vitamin D deficiency in patients with a low energy fracture of the foot or ankle.

Methods: Over a 6-month period, a serum 25-OH vitamin D level was obtained from consecutive patients with a low energy ankle fracture, fifth metatarsal base fracture, or stress fracture of the foot or ankle. For comparative purposes, vitamin D levels in patients with an ankle sprain and no fracture were also examined.

Results: The study cohort included 75 patients, of which 21 had an ankle fracture, 23 had a fifth metatarsal base fracture, and 31 had a stress fracture. The mean age was 52 (range, 16–80) years. Thirty-five of the fracture patients (47%) had an insufficient vitamin D level (below the recommended level of 30 ng/mL), and 10 of the patients (13%) had a level that was deficient (< 20 ng/mL). Vitamin D levels were significantly lower in those with a fracture than in those with an ankle sprain ($P = .02$). In the fracture cohort, the factors significantly associated with vitamin D insufficiency in the multivariate analysis were smoking ($P = .03$), obesity ($P = .003$), and other medical risk factors for vitamin D deficiency ($P = .05$).

Conclusions: Hypovitaminosis D was common among patients with a foot or ankle injury seen at our institution. Patients with a low energy fracture of the foot or ankle were at particular risk for low vitamin D, especially if they smoked, were obese, or had other medical risk factors. Given that supplementation with vitamin D (\pm calcium) has been shown to reduce the risk of fragility fractures and improve fracture healing, monitoring of 25-OH vitamin D and supplementation should be considered in patients with fractures.

Level of Evidence: Level III, prospective case control.

Keywords: Vitamin D deficiency, hypovitaminosis D, ankle fracture, metatarsal fracture, stress fracture

Introduction

Fragility fractures are associated with considerable morbidity, mortality, and cost to the health care system and are increasingly common in our society. Vitamin D deficiency has been identified as one of the most common causes of these fractures,^{20,25,28} as serum 25-hydroxyvitamin D [25(OH)D] levels persistently below 20 ng/mL may lead to hypocalcemia, secondary hyperparathyroidism, osteoporosis, and osteomalacia in adults or rickets in children.^{13,24} Evidence suggests that low vitamin D levels may also be implicated in fracture nonunions.^{4,14} In addition, it has been suggested that maintenance of adequate vitamin D levels may reduce the risk of cancer, falls, and cardiovascular disease.^{1,17,19,31}

Vitamin D deficiency is estimated to affect more than 1 billion people globally and more than 25% of individuals in the United States.^{14,21,22} Studies have shown low levels of

vitamin D in elective orthopaedic surgery patients in New York City (15% with vitamin D < 20 ng/mL),³ healthy Boston adolescents (42% with vitamin D < 20 ng/mL),¹² patients undergoing total hip replacement in Boston (22% with vitamin D < 15 ng/mL)¹⁰ and the United Kingdom (24% with vitamin D < 16 ng/mL),²² patients with an unexplained fracture nonunion (51% with vitamin D < 20 ng/mL),⁴ patients undergoing spinal fusion (27% with vitamin

¹Brigham Foot and Ankle Center at the Faulner, Jamaica Plain, MA, USA
²Department of Orthopaedics, Shock Trauma Center, Baltimore, MD, USA

Corresponding Author:
Jeremy T. Smith, MD, Brigham Foot and Ankle Center at the Faulner,
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„Výsledky kvaziexperimentu ukázaly, že vliv plyometrických cvičení na zlepšení úrovně rychlosti sprintu a rychlosti bruslení hráčů u experimentální skupiny nebyl prokázán.“

Influence of Plyometric Training on the Level of Speed Ability with Changes of Direction in Ice Hockey

Marián Knechta¹, Ivan Čilič¹, Jiří Zháněš²

¹Matej Bel University, Faculty of Arts, Banská Bystrica, Slovakia

²Masaryk University, Faculty of Sports Studies, Brno, Czechia

Abstract

AIM: Speed skills are among the decisive factors in sports performance in ice hockey. Therefore, it is necessary to examine them in all age categories. Our goal was to determine the effect of plyometric exercises on the level of running and skating speed at 40 m with changes of direction in young hockey players aged 14–15 years.

METHODS: The research group consisted of 33 ice hockey players (Male; age: 14.7 ± 0.7 ; height: $166.5\text{cm} \pm 7.3$; weight: $53.4\text{kg} \pm 6.9$) divided into two sets. Experimental group ($n = 18$), and control group ($n = 15$). During 8 weeks, the players completed training units of general preparation and training units on ice, in the experimental set was added an experimental factor of plyometric exercises carried out according to the training protocol. Speed diagnostics consisted of the following two tests: running at 40 m with changes of direction and skating forward at 40 m with changes of direction.

RESULTS: Between the results of the tests in running speed and skating speed, significant differences were found both in the pretest and in the posttest between the experimental (EXP) and the control (KO) set in favor of the EXP set. Thus, the EXP set did not show the effect of plyometric exercises on improving the level of running speed and only a small effect on improving the level of skating speed.

CONCLUSION: The results of the quasi-experiment showed that the influence of plyometric exercises on the improvement of the level of running and skating speed of the players of the experimental group was not proven. In further research, it will be necessary to modify the training protocol and verify its application to comparable files.

Key words: running speed, skating speed, plyometric exercises, training protocol.

INTRODUCTION


Ice hockey is one of the most dynamic, fastest and toughest sports in the world, which places extreme demands on the athlete's muscle load. Speed skills are one of the most important factors in a hockey player's performance. Perič and Dovalil (2010), Boyd (2016), Owen and Dellal (2016), Jebavý and Hojka (2017) characterize speed skills as the ability to perform activities with maximum intensity resp. develop the maximum possible speed in the shortest possible time with a movement activity of up to 20 seconds, without almost any resistance. In ice hockey, speed manifestations are tied to specific motor skills, determined by skating and activity on ice. Tóth (2010), Joyce and Lewindon (2014), Skahan (2016) and others agree that a characteristic feature of the current development of world hockey is the process of its further intensification, i. increased pace of play, which leads to more performed individual game activities and game combinations. In this context, the development of speed skills is becoming even more important, which is one of the important factors in increasing the effectiveness of the hockey player's technical skills. The volume of performed intensive activity of the player increases, the action of the player takes place under increasing temporal and spatial pressure, which is one of the characteristic features of

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„Kombinace plyometrického a silového
tréninku po dobu 8 týdnů byla lepší než silový
trénink při sprintu na 10 m.“

Improvement of Ice Hockey Players' On-Ice Sprint With Combined Plyometric and Strength Training

Torstein E. Døhlin, Ole C. Haugen, Simen Haugerud,
Ivana Hollan, Truls Raastad, and Bent R. Rønnestad

Background: Combined plyometric and strength training has previously been suggested as a strategy to improve skating performance in ice hockey players. However, the effects of combined plyometric and strength training have not previously been compared with the effects of strength training only. **Purpose:** To compare the effects of combined plyometric and strength training on ice hockey players' skating sprint performance with those of strength training only. **Methods:** Eighteen participants were randomly assigned to 2 groups that completed 5 strength-training sessions/wk for 8 wk. One group included plyometric exercises at the start of 3 sessions/wk (PLY+ST), and the other group included core exercises in the same sessions (ST). Tests of 10- and 35-m skating sprints, horizontal jumping, 1-repetition-maximum (1 RM) squat, skating multistage aerobic test (SMAT), maximal oxygen consumption, repeated cycle sprints, and body composition were performed before and after the intervention. **Results:** The participants increased their 1RM squat, lean mass, and body mass ($P < .05$), with no difference between the groups. Furthermore, they improved their 3x broad jump, repeated cycle sprint, and SMAT performance ($P < .05$), with no difference between the groups. PLY+ST gained a larger improvement in 10-m on-ice sprint performance than ST ($P < .025$). **Conclusion:** Combining plyometric and strength training for 8 wk was superior to strength training alone at improving 10-m on-ice sprint performance in high-level ice hockey players.

Keywords: skating sprint, stretch-shortening cycle, off-ice training, strength and conditioning

Skating acceleration and maximal skating velocity are among the most important physical determinants of ice hockey performance.^{1,2} However, due to a long and intensive ice hockey season,³ training to improve these capacities typically occurs outside of the competition season. A strong relation has been identified between these skating capacities and running sprint, and horizontal and vertical jump performance.⁴⁻⁷ It is therefore believed that ice hockey players should seek to improve these off-ice capacities to enhance their skating performance.⁸ Although conflicting results exist,⁴ muscle strength and power has been related to skating, sprinting, and jumping performance.^{9,10} Therefore, muscular strength and power are likely important physical determinants of ice hockey performance.

Among others, plyometric training and strength training with maximal mobilization could potentially improve muscular power.¹⁰ Furthermore, plyometric training has been found to effectively improve skating, sprinting, and vertical jump performance.^{1,7,11,12} However, plyometric training has been found to be less effective than heavy strength training for increasing sprint and vertical-jump performance.¹¹ Therefore, the effect of combining plyometric and strength training has been compared with strength training only, however, with conflicting results.¹³⁻¹⁵ Specifically, combined plyometric and strength training was found to be superior in moderately

strength-trained individuals,¹⁴ whereas no differences were found in elite soccer and handball players.^{13,15} However, it is likely that a considerable amount of the muscle actions occurring during regular soccer and handball training is plyometric in nature. Thus, adding specific plyometric training to these players' strength training may not cause an additional positive training effect.¹⁶ Due to a longer ground-contact time during high-velocity skating than running,^{4,16} it can, however, be hypothesized that fewer plyometric muscle actions occur during ice hockey versus soccer and handball. Although combined plyometric and strength training has been found to be effective for the purpose of improving skating performance, the effect of strength training alone has not, to our knowledge, been controlled in previous studies.^{1,7}

During maximal velocity skating, ice contact time lasts approximately one-third of a second.⁴ However, the kinematics of the initial acceleration phase during speed and ice hockey skating is similar to a running sprint, with a push-off against a fixed point.^{17,18} Because the ground contact time during the acceleration phase of sprint running is approximately one-fifth of a second,¹⁸ it can be hypothesized that ice-contact time during the acceleration phase of skating is shorter than during maximal-velocity skating. This implies that accelerating on skates may rely on somewhat different neuromuscular capacities than maximal-velocity skating. Therefore, a short (10 m) and a longer (35 m) distance of sprint skating were investigated in the current study.

The primary purpose of the current study was to compare the effects of combined plyometric and strength training to strength training supplemented by core training on enhancing 10- and 35-m skating sprint performance. As a part of this, factors related to sprint performance, like maximal strength and lean mass in the

Døhlin, Haugen, Haugerud, and Rønnestad are with the Dept of Sport Science, Lillehammer University College, Lillehammer, Norway. Hollan is with the Hospital for Rheumatic Diseases, Lillehammer, Norway. Raastad is with the Dept of Physical Performance, Norwegian School of Sport Sciences, Oslo, Norway. Rønnestad (bent.ronnestad@hhl.no) is corresponding author.

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