

BOL U DONJEM DIJELU LEĐA U DJECE I ADOLESCENATA SPORTAŠA



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Uvod: Bol u donjem dijelu leđa u djece i adolescenata koji se aktivno bave sportom predstavlja značajan, ali često podcijenjen klinički problem. Iako se u velikom broju slučajeva radi o funkcionalnim poremećajima povezanim s prenaprezanjem, u ovoj populaciji postoji povećan rizik od strukturnih ozljeda kralježnice, osobito tijekom razdoblja ubrzanog rasta. Tjelesna aktivnost snažno se promiče kao temelj prevencije pretilosti i metaboličkih poremećaja u dječjoj dobi, no paralelno se bilježi porast sindroma prenaprezanja, osobito u kontekstu rane sportske specijalizacije, visokog intenziteta treninga i nedostatnog vremena oporavka. Nepravodobno prepoznavanje i neadekvatna dijagnostička obrada mogu dovesti do odgađanja liječenja i produljenja simptoma, s mogućim dugoročnim posljedicama na zdravlje kralježnice i bavljenje sportom. Prevalencija: Prevalencija boli u donjem dijelu leđa u djece i adolescenata sportaša varira ovisno o dobi, vrsti i intenzitetu sportske aktivnosti. Procjenjuje se da se bol u donjem dijelu leđa javlja u 10–15% (1) mladih sportaša, dok studije koje uključuju širu populaciju djece i adolescenata bilježe prevalenciju do 33,6% (2). U literaturi se kao kritična dobna granica navodi 14. godina života, nakon koje se učestalost križobolje povećava više od tri puta (3). Značajne razlike zabilježene su među sportovima, pa su tako sportovi s ponavljanim pokretima fleksije, ekstenzije i rotacije kralježnice, poput borilačkih sportova, veslanja, kanua i dizanja utega, povezani s višom prevalencijom bolova u leđima (4). Recentni podaci ukazuju na podjednaku pojavnost simptoma među dječacima i djevojčicama (5). Etiologija i rizični čimbenici: Etiologija boli u leđima kod mladih sportaša razlikuje se od one u odraslih zbog razvojnih specifičnosti kralježnice, koje uključuju zone rasta i sekundarne centre osifikacije osjetljive na ponavljana mehanička opterećenja (1). Najčešći rizični čimbenici uključuju ubrzani rast tijekom puberteta, smanjenu fleksibilnost, mišićnu neravnotežu, slabost trbušne i glutealne muskulature, hiperlordotično držanje te neadekvatno planirane trenažne programe (4). Duljina sportskog staža i izloženost intenzivnim natjecateljskim razdobljima poput sportskih kampova dodatno povećavaju rizik, dok morfološke karakteristike poput skolioze i kifoze prema recentnim sustavnim pregledima ne predstavljaju samostalan rizični čimbenik (2). Klinička slika i dijagnoza: Klinička prezentacija varira ovisno o osnovnoj patologiji. Istegnuća mekih tkiva najčešći su uzrok boli i mogu imati akutan ili postupan početak. Funkcionalni sindromi, poput hiperlordotične boli odnosno sindroma prenaprezanja posteriornih elemenata, tipično se očituju boli

provociranom ekstenzijom. Strukturne ozljede uključuju spondilolizu i spondilolistezu, koje se također najčešće manifestiraju bolom pri ekstenziji. Avulzijski prijelomi apofize tijela kralješka i hernijacija diska u ovoj populaciji pojavljuju se rijetko i češće su povezani s boli pri fleksiji. Dijagnostički postupak započinje detaljnim kliničkim pregledom i procjenom. Radiološka obrada indicirana je prema kliničkim nalazima, pri čemu je magnetna rezonancija metoda izbora (6). Liječenje: Liječenje je u većini slučajeva konzervativno (5). Temelj liječenja čini kineziterapija usmjerena na jačanje mišića trupa i stabilizatora zdjelice, smanjenje mišićne neravnoteže te poboljšanje neuromuskularne kontrole i propriocepcije (7). Pasivni modaliteti fizikalne terapije, poput primjene hladnoće, topline, lasera niskog intenziteta, električne stimulacije mišića i pulsne elektromagnetske terapije, imaju pomoćnu ulogu (8). Primjena lumbalne ortoze indicirana je selektivno, kod pacijenata kod kojih se ne postigne poboljšanje uz standardne konzervativne mjere (5). Većina mladih sportaša postiže siguran povratak sportskim aktivnostima unutar nekoliko mjeseci, ovisno o dijagnozi i kliničkom tijeku. Kirurško liječenje indicirano je rijetko, u slučajevima perzistentne boli ili progresivnog neurološkog deficita. Prevencija: Prevencija boli u leđima kod djece i adolescenata sportaša temelji se na individualiziranom doziranju opterećenja i pravilnoj periodizaciji treninga, redovitoj funkcionalnoj i biomehaničkoj procjeni tijekom razdoblja ubrzanog rasta te provođenju ciljanih preventivnih programa, osobito u sportovima s povećanim rizikom, uključujući judo, hrvanje, dizanje utega, kanu i veslanje (4). Edukacija sportaša, roditelja i trenera o ranim simptomima i pravilnoj tehnici treninga ključna je za smanjenje učestalosti boli u leđima. Dokazano učinkovite preventivne mjere uključuju programe tjelesne aktivnosti usmjerene na poboljšanje posturalne kontrole, fleksibilnosti i mišićne izdržljivosti (9). Zaključak: Bol u leđima u djece i adolescenata sportaša predstavlja važan klinički entitet koji zahtijeva pravodobno prepoznavanje i interdisciplinarni pristup prevenciji i liječenju. Sustavna dijagnostika, ciljana kineziterapija i kvalitetni preventivni programi omogućuju siguran povratak sportskim aktivnostima uz očuvanje dugoročnog zdravlja kralježnice.

Ključne riječi

sportske ozljede, rehabilitacija, kineziterapija, adolescenti

LOW BACK PAIN IN CHILD AND ADOLESCENT ATHLETES

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Introduction: Low back pain in child and adolescent athletes represents an important and often underestimated clinical problem. Although in many cases it is related to functional overuse disorders, this population has an increased risk of structural spinal injuries, particularly during periods of accelerated growth. While physical activity is strongly promoted as a key strategy for preventing obesity and metabolic disorders in childhood, a parallel increase in

overuse syndromes has been observed, especially in the context of early sport specialization, high training intensity, and insufficient recovery time. Delayed recognition and inadequate diagnostic evaluation may result in postponed treatment and prolonged symptoms, with potential long-term consequences for spinal health and sports participation. Prevalence: The prevalence of low back pain in child and adolescent athletes varies depending on age, type, and intensity of sports participation. It is estimated that low back pain occurs in 10–15% of young athletes (1), while studies including the general population of children and adolescents report prevalence rates of up to 33.6% (2). The age of 14 years is identified in the literature as a critical period, after which the prevalence of low back pain increases more than threefold (3). Significant differences have been observed among sports, with higher prevalence reported in disciplines involving repetitive spinal flexion, extension, and rotation, such as combat sports, rowing, canoeing, and weightlifting (4). Recent data indicate no substantial differences in symptom prevalence between boys and girls (5). Etiology and Risk Factors: The etiology of low back pain in young athletes differs from that in adults due to developmental characteristics of the growing spine, including growth zones and secondary ossification centers that are sensitive to repetitive mechanical loading (1). The most common risk factors include rapid growth during puberty, reduced flexibility, muscular imbalance, weakness of the abdominal and gluteal muscles, hyperlordotic posture, and inadequately planned training programs (4). Longer sports participation history and exposure to intensive competitive periods, such as training camps, further increase the risk, whereas morphological characteristics such as scoliosis and kyphosis do not appear to represent independent risk factors according to recent systematic reviews (2). Clinical Presentation and Diagnosis: Clinical presentation varies according to the underlying pathology. Soft tissue strains are the most common cause of low back pain and may present acutely or develop gradually. Functional conditions, such as hyperlordotic pain or posterior element overuse syndromes, typically manifest with pain provoked by lumbar extension. Structural injuries include spondylolysis and spondylolisthesis, which also most commonly present with extension-related pain. Vertebral body apophyseal avulsion fractures and intervertebral disc herniation occur less frequently in this population and are more often associated with flexion-related pain. Diagnostic evaluation begins with a detailed clinical examination and assessment. Radiological evaluation is indicated based on clinical findings, with magnetic resonance imaging as the method of choice (6). Treatment: Treatment is predominantly conservative (5). Treatment includes exercise-based rehabilitation focusing on strengthening of trunk muscles and pelvic stabilizers, reduction of muscular imbalance, and improvement of neuromuscular control and proprioception (7). Passive physical therapy modalities, including cryotherapy, thermotherapy, low-level laser therapy, electrical muscle stimulation, and pulsed electromagnetic field therapy, play a supportive role (8). Lumbar bracing is indicated selectively in patients who do not improve with standard conservative measures (5). Most young athletes achieve a safe return to sports participation within several months, depending on diagnosis

and clinical course. Surgical treatment is rarely indicated, primarily in cases of persistent pain or progressive neurological deficit. Prevention: Prevention of low back pain in child and adolescent athletes is based on individualized load management and appropriate training periodization, regular functional and biomechanical assessment during periods of accelerated growth, and implementation of targeted preventive programs, particularly in sports with increased risk, including judo, wrestling, weightlifting, canoeing, and rowing (4). Education of athletes, parents, and coaches regarding early symptom recognition and proper training techniques is essential for reducing the incidence of low back pain. Proven effective preventive strategies include physical activity programs aimed at improving postural control, flexibility, and muscular endurance (9). Conclusion: Low back pain in child and adolescent athletes represents a clinically relevant condition that requires timely recognition and an interdisciplinary approach to prevention and treatment. Systematic diagnostic evaluation, targeted exercise-based rehabilitation, and high-quality preventive programs enable a safe return to sport while preserving long-term spinal health.

Keywords

sports injuries, rehabilitation, exercise therapy, adolescent

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