

Chapter 99

Sports Dermatology

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REFERENCES

1. Cordoro KM, Ganz JE: Training room management of medical conditions: Sports dermatology. *Clin Sports Med* **24**(3):565-599, 2005
2. Pecci M, Comeau D, Chawla V: Skin conditions in the athlete. *Am J Sports Med* **37**(2):406-418, 2009
3. Strauss RH et al: Illness and absence among wrestlers, swimmers, and gymnasts at a large university. *Am J Sports Med* **16**:653, 1998
4. Gaulrapp H, Weber A, Rosemeyer B: Injuries in mountain biking. *Knee Surg Sports Traumatol Arthroscopy* **9**:48-53, 2001
5. Heitkamp HC, Horstmann T, Schalinski H: In-line skating: Injuries and prevention. *J Sports Med Physical Fitness* **40**:247-253, 2000
6. Brenner IK et al: Infection in athletes. *Sports Med* **17**:86, 1944
7. Perz-Perdomo R et al: Description of morbidity notified in the epidemiologic surveillance system of the XVII Central American and Caribbean Sport Games, Puerto Rico, 1993. *Puerto Rico Health Sci J* **13**:267, 1993
8. Shephard RJ: Science and medicine of canoeing and kayaking. *Sports Med* **4**:19, 1997
9. Englund SL, Adams BB: Winter sports dermatology: A review. *Cutis* **83**(1):42-48, 2009
10. Redziniak DE et al: Methicillin-resistant *Staphylococcus aureus* (MRSA) in the Athlete. *Int J Sports Med* **30**(8):557-562, 2009
11. Many PS: Preventing community-associated methicillin-resistant *Staphylococcus aureus* among student athletes. *J Sch Nurs* **24**(6):370-378, 2008
12. Stevens MP et al: Community-acquired methicillin resistant *Staphylococcus aureus* in a women's collegiate basketball team. *South Med J* **101**(10):1067-1068, 2008
13. Bowers AL, Huffman GR, Sennett BJ: Methicillin-resistant *Staphylococcus aureus* infections in collegiate football players. *Med Sci Sports Exerc* **40**(8):1362-1367, 2008
14. Cohen PR: Cutaneous community-acquired methicillin-resistant *Staphylococcus aureus* infection in participants of athletic activities. *South Med J* **99**(6):596-602, 2005 (Print version)
15. Arnold FW, Wojda B: An analysis of a community-acquired pathogen in a Kentucky community: methicillin-resistant *Staphylococcus aureus*. *J Ky Med Assoc* May; **103**(5):206-210, 2005
16. Centers for Disease Control and Prevention (CDC): Methicillin-resistant *Staphylococcus aureus* infections among competitive sports participants—Colorado, Indiana, Pennsylvania, and Los Angeles County, 2000-2003. *MMWR* Aug **22**; **52**(33):793-795, 2003 (Print version)
17. Nguyen DM, Mascola L, Brancoft E: Recurring methicillin-resistant *Staphylococcus aureus* infections in a football team. *Emerg Infect Dis* Apr; **11**(4):526-532, 2005
18. Begier EM et al: Connecticut Bioterrorism Field Epidemiology Response Team. A high-morbidity outbreak of methicillin-resistant *Staphylococcus aureus* among players on a college football team, facilitated by cosmetic body shaving and turf burns. *Clin Infect Dis* Nov **15**; **39**(10):1446-1453, 2004
19. Kazakova SV et al: A clone of methicillin-resistant *Staphylococcus aureus* among professional football players. *N Engl J Med* Feb **3**; **352**(5):468-475, 2005 (Print version)
20. Wang J et al: An outbreak of Methicillin-resistant *Staphylococcus aureus* cutaneous infection in a saturation diving facility. *Undersea Hyperb Med* Winter; **30**(4):277-284, 2003
21. Calfee DP et al: Spread of methicillin-resistant *Staphylococcus aureus* (MRSA) among household contacts of individuals with nosocomially acquired MRSA. *Infect Control Hosp Epidemiol* Jun; **24**(6):422-426, 2003
22. Ellis MW et al: Natural history of community-acquired methicillin-resistant *Staphylococcus aureus* colonization and infection in soldiers. *Clin Infect Dis* Oct **1**; **39**(7):971-979, 2004
23. Centers for Disease Control and Prevention (CDC): Methicillin-resistant *Staphylococcus aureus* among players on a high school football team—New York City, 2007. *MMWR* Mortal Jan **30**; **58**(3):52-55, 2009

24. Fridkin SK et al: Active Bacterial Core Surveillance Program of the Emerging Infections Program Network. Methicillin-resistant *Staphylococcus aureus* disease in three communities. *N Engl J Med* Apr 7;352(14):1436-1444, 2005 (Print version)
25. Young DM et al: Perdreau-Remington F, Lee C, Mankani M, Mackersie R, Schecter WP. An epidemic of methicillin-resistant *Staphylococcus aureus* soft tissue infections among medically underserved patients. *Arch Surg Sep*;139(9):947-951, 2004
26. Lee MC et al: Management and outcome of children with skin and soft tissue abscesses caused by community-acquired methicillin-resistant *Staphylococcus aureus*. *Pediatr Infect Dis J* Feb;23(2):123-127, 2004
27. Rutar T et al: Bilateral Blindness From Orbital Cellulitis Caused by Community-Acquired Methicillin-Resistant *Staphylococcus aureus*. *Am J Ophthalmol Oct*;140(4):740-742, 2005
28. Takizawa Y et al: A Panton-Valentine leucocidin (PVL)-positive community-acquired methicillin-resistant *Staphylococcus aureus* (MRSA) strain, another such strain carrying a multiple-drug resistance plasmid, and other more-typical PVL-negative MRSA strains found in Japan. *J Clin Microbiol* 2005 Jul;43(7):3356-3363, 2005
29. Boyle-Vavra S et al: Successful multiresistant community-associated methicillin-resistant *Staphylococcus aureus* lineage from Taipei, Taiwan, that carries either the novel Staphylococcal chromosome cassette mec (SCCmec) type VT or SCCmec type IV. *J Clin Microbiol Sep*;43(9):4719-4730, 2005
30. Braun L et al: Increasing clindamycin resistance among methicillin-resistant *Staphylococcus aureus* in 57 northeast United States military treatment facilities. *Pediatr Infect Dis J Jul*;24(7):622-626, 2005
31. Kaplan SL et al: Three-year surveillance of community-acquired *Staphylococcus aureus* infections in children. *Clin Infect Dis Jun 15*;40(12):1785-1791, 2005
32. Lewis JS 2nd, Jorgensen JH: Inducible clindamycin resistance in Staphylococci: should clinicians and microbiologists be concerned? *Clin Infect Dis* 2005 Jan 15;40(2):280-285.
33. Frank AL et al: Clindamycin treatment of methicillin-resistant *Staphylococcus aureus* infections in children. *Pediatr Infect Dis J*;21:530-534, 2002
34. Siberry GK et al: Failure of clindamycin treatment of methicillin-resistant *Staphylococcus aureus* expressing inducible clindamycin resistance in vitro. *Clin Infect Dis* 37:1257-1260, 2003
35. Lewis JS 2nd, Jorgensen JH: Inducible clindamycin resistance in staphylococci: should clinicians and microbiologists be concerned? *Clin Infect Dis* 40:280-285, 2005
36. Sattler CA, Mason EO Jr, Kaplan SL: Prospective comparison of risk factors and demographic and clinical characteristics of community-acquired, methicillin-resistant versus methicillin-susceptible *Staphylococcus aureus* infection in children. *Pediatr Infect Dis J* 21:910-917, 2002
37. Martinez-Aguilar G et al: Clindamycin treatment of invasive infections caused by community-acquired, methicillin-resistant and methicillin-susceptible *Staphylococcus aureus* in children. *Pediatr Infect Dis J* 22:593-598, 2003
38. Levin TP et al: Potential clindamycin resistance in clindamycin-susceptible, erythromycin-resistant *Staphylococcus aureus*: report of a clinical failure. *Antimicrobial Agents Chemother* 49:1222-1224, 2005
39. Wang CC et al: Epidemiological typing of community-acquired methicillin-resistant *Staphylococcus aureus* isolates from children in Taiwan. *Clin Infect Dis Aug 15*;39(4):481-487, 2004
40. Weigelt J et al: Linezolid versus vancomycin in treatment of complicated skin and soft tissue infections. *Antimicrob Agents Chemother Jun*;49(6):2260-2266, 2005
41. Sharpe JN, Shively EH, Polk HC Jr: Clinical and economic outcomes of oral linezolid versus intravenous vancomycin in the treatment of MRSA-complicated, lower-extremity skin and soft-tissue infections caused by methicillin-resistant *Staphylococcus aureus*. *Am J Surg Apr*;189(4):425-428, 2005 (Print version)
42. Li JZ et al: Effect of linezolid versus vancomycin on length of hospital stay in patients with complicated skin and soft tissue infections caused by known or suspected methicillin-resistant staphylococci: results from a randomized clinical trial. *Surg Infect (Larchmt)* Spring;4(1):57-70, 2003
43. Mangili A et al: Daptomycin-resistant, methicillin-resistant *Staphylococcus aureus* bacteremia. *Clin Infect Dis Apr 1*;40(7):1058-1060, 2005
44. Hayden MK et al: Development of Daptomycin resistance in vivo in methicillin-resistant *Staphylococcus aureus*. *J Clin Microbiol Oct*;43(10):5285-5287, 2005
45. Vaudaux P et al: Intensive therapy with ceftobiprole medocaril of experimental foreign-body infection by methicillin-resistant *Staphylococcus aureus*. *Antimicrob Agents Chemother Sep*;49(9):3789-3793, 2005

46. Miller M et al: *Staphylococcus aureus* in the community: colonization versus infection. *PLoS One* Aug 20;**4**(8):e6708, 2009
47. Garza D et al: Ineffectiveness of surveillance to control community-acquired methicillin-resistant *Staphylococcus aureus* in a professional football team. *Clin J Sport Med* Nov;**19**(6):499-501, 2009
48. Sanders JC: Reducing MRSA infections in college student athletes: implementation of a prevention program. *J Community Health Nurs* Oct;**26**(4):161-172, 2009
49. Elston DM: Handling a community-acquired methicillin-resistant *Staphylococcus aureus* outbreak: emerging data. *Cutis* Aug;**82**(2 Suppl 2):13-17, 2008
50. Block C et al: Evaluation of chlorhexidine and povidone iodine activity against methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant *Enterococcus faecalis* using a surface test. *J Hosp Infect* Oct;**46**(2):147-152, 2000
51. Zhang YH et al: Study on the resistance of methicillin-resistant *Staphylococcus aureus* to iodophor and chlorhexidine. *Zhonghua Liu Xing Bing Xue Za Zhi* Mar;**25**(3):248-250, 2004
52. Kampf G, Jarosch R, Ruden H: Limited effectiveness of chlorhexidine based hand disinfectants against methicillin-resistant *Staphylococcus aureus* (MRSA). *J Hosp Infect* Apr;**38**(4):297-303, 1999
53. Suzuki J et al: In vitro susceptibility of *Staphylococcus aureus* including MRSA to four disinfectants. *ASDC J Dent Child* Jul-Aug;**64**(4):260-263, 1997
54. Brenwald NP, Fraise AP: Triclosan resistance in methicillin-resistant *Staphylococcus aureus* (MRSA). *J Hosp Infect* Oct;**55**(2):141-144, 2003
55. Bamber AI, Neal TJ: An assessment of triclosan susceptibility in methicillin-resistant and methicillin-sensitive *Staphylococcus aureus*. *J Hosp Infect* Feb;**41**(2):107-109, 1999
56. Mulvey MR et al: Community-associated methicillin-resistant *Staphylococcus aureus*, Canada. *Emerg Infect Dis* Jun;**11**(6):844-850, 2005
57. Harbarth S et al: Randomized, placebo-controlled, double-blind trial to evaluate the efficacy of mupirocin for eradicating carriage of methicillin-resistant *Staphylococcus aureus*. *Antimicrob Agents Chemother* Jun;**43**(6):1412-1416, 1999
58. Pickup TL, Adams BB: Prevalence of tinea pedis in professional and college soccer players versus non-athletes. *Clin J Sport Med* Jan;**17**(1):52-54, 2007
59. Derya A, Ilgen E, Metin E: Characteristics of sports-related dermatoses for different types of sports: a cross-sectional study. *J Dermatol* Aug;**32**(8):620-625, 2005
60. Shiraki Y et al: A nationwide survey of *Trichophyton tonsurans* infection among combat sport club members in Japan using a questionnaire form and the hairbrush method. *J Am Acad Dermatol* 2006 Apr;**54**(4):622-626, 2005
61. Ergin S et al: An experience from an outbreak of tinea capitis gladiatorum due to *Trichophyton tonsurans*. *Clin Exp Dermatol* Mar;**31**(2):212-214, 2006
62. Fujihiro M: [The part of a hospital dermatologist. Prevention of *Trichophyton tonsurans* infection]. *Nippon Ishinkin Gakkai Zasshi* **49**(3):191-195, 2008
63. Shiraki Y et al: Commonly affected body sites in 92 Japanese combat sports participants with *Trichophyton tonsurans* infection. *Mycoses* **52**(4):339-342, 2009; Sep 12, 2008 [Epub ahead of print] PMID: 18793263
64. Shiraki Y et al: Assessment of the treatment protocol described in the guidelines for *Trichophyton tonsurans* infection. *Nippon Ishinkin Gakkai Zasshi* **49**(1):27-31, 2008
65. Shinoda H, Nishimoto K: [Clinical study of 57 cases of infection with *Trichophyton tonsurans* examined at a dermatology clinic in Saga Prefecture, Japan]. *Nippon Ishinkin Gakkai Zasshi* **48**(2):79-84, 2007
66. Mochizuki T et al: Epidemiology of sporadic (non-epidemic) cases of *Trichophyton tonsurans* infection in Japan based on PCR-RFLP analysis of non-transcribed spacer region of ribosomal RNA gene. *Jpn J Infect Dis* May;**61**(3):219-22, 2008
67. Brickman K et al: Fluconazole as a prophylactic measure for tinea gladiatorum in high school wrestlers. *Clin J Sport Med* Sep;**19**(5):412-414, 2009
68. Kvernmo HD, et al: Enhanced endothelium-dependent vasodilatation in human skin vasculature induced by physical conditioning. *Eur J Applied Physiol Occ Physiol* **79**:30-36, 1999
69. Lindinger MI: Exercise in the heat: thermoregulatory limitations to performance in humans and horses. *Canadian J Applied Physiol* **24**:152-163, 1999
70. Kato M et al: Thermophysiological effects of two different types of clothing under warm temperatures. *Applied Hum Sci* **14**:119, 1995
71. Bassett DR, et al: Thermoregulatory responses to skin wetting during prolonged treadmill running. *Med Sci Sports Exercise* **19**:28-32, 1997

72. Webster J et al: A light-weight cooling vest enhances performance of athletes in the heat. *Ergonomics* 2005 Jun 10;**48**(7):821-837.
73. Arngrimsson SA et al: Cooling vest worn during active warm-up improves 5-km run performance in the heat. *J Appl Physiol* May;**96**(5):1867-1874, 2004
74. Fallon KE, May JJ: Harlequin syndrome in two athletes. *Br J Sports Med* Jan;**39**(1):e1, 2005
75. Fisher AA: Sports-related cutaneous reactions: Part 1. Dermatoses due to physical agents. *Cutis* **63**:134-136, 1999
76. Kirkland R, Adams BB: Dermatological problems in the football player. *Int J Dermatol* Aug;**45**(8):927-932, 2006
77. Mailler-Savage EA, Adams BB: Skin manifestations of running. *J Am Acad Dermatol* 2006 Aug;**55**(2):290-301, 2006
78. Inui S, Itami S: 2 cases of sumo wrestlers' friction dermatitis. *Contact Dermatitis* Jun;**58**(6):374-375, 2008
79. Ambros-Rudolph CM et al: Malignant melanoma in marathon runners. *Arch Dermatol* Nov;**142**(11):1471-1474, 2006
80. Ezzedine K et al: Expatriates in high-UV index and tropical countries: sun exposure and protection behavior in 9,416 French adults. *J Travel Med* Mar-Apr;**14**(2):85-91, 2007
81. Richtig E et al: Melanoma markers in marathon runners: increase with sun exposure and physical strain. *Dermatology* **217**(1):38-44, 2008
82. Moehrle M: Outdoor sports and skin cancer. *Clin Dermatol* Jan–Feb;**26**(1):12-15, 2008
83. Kockentiet B, Adams BB: Contact dermatitis in athletes. *J Am Acad Dermatol* Jun;**56**(6):1048-1055, 2007
84. Amado A, Taylor JS: Contact dermatitis in the bowling pro shop. *Dermatitis* Nov–Dec;**19**(6):334-338, 2008
85. Isaksson M, Möller H, Pontén A: Occupational allergic contact dermatitis from epoxy resin in a golf club repairman. *Dermatitis* Sep–Oct;**19**(5):E30-32, 2008
86. Kalavala M et al: Allergic contact dermatitis to peppermint foot spray. *Contact Dermatitis* Jul;**57**(1):57-58, 2007
87. Martellotta D et al: Contact allergy to *p*-tert-butylphenol formaldehyde resin and zinc diethyldithiocarbamate in a wet suit. *Dermatitis* Mar–Apr;**19**(2):E3-4, 2008
88. Meinke M et al: Migration and penetration of a fluorescent textile dye into the skin—in vivo versus in vitro methods. *Exp Dermatol* Sep;**18**(9):789-792, 2009
89. Weston WL, Morelli JG: Dermatitis under soccer shin guards: allergy or contact irritant reaction? *Pediatr Dermatol* Jan–Feb;**23**(1):19-20, 2006
90. Bodekaer M et al: Sun protection factor persistence during a day with physical activity and bathing. *Photodermatol Photoimmunol Photomed*, Dec;**24**(6):296-300, 2008
91. Fraser SJ et al: Cercarial dermatitis in the UK. *Clin Exp Dermatol* Apr;**34**(3):344-346, 2009
92. Walker J, Adams B: Cutaneous manifestations of anabolic-androgenic steroid use in athletes. *Int J Dermatol* Oct;**48**(10):1044-1048, 2009
93. Melnik B, Jansen T, Grabbe S: Abuse of anabolic-androgenic steroids and bodybuilding acne: an underestimated health problem. *J Dtsch Dermatol Ges* Feb;**5**(2):110-117, 2007
94. Melnik BC: Androgen abuse in the community. *Curr Opin Endocrinol Diabetes Obes* Jun;**16**(3):218-223, 2009.
95. Lindberg-Larsen R, Fogh K: Traumatic pyoderma gangrenosum of the face: pathergy development after bike accident. *Dermatology* **218**(3):272-274, 2009
96. Parkkinen MU et al: Sweating response to moderate thermal stress in atopic dermatitis. *Br J Dermatol* **126**:346, 1992
97. Salzer B et al: Gruppensport als adjuvante Therapie für Patienten mit atopischem Ekzem. *Hautarzt* **45**:751, 1994
98. Heyer GR, Hornstein OP: Recent studies of cutaneous nociception in atopic and nonatopic subjects. *J Dermatol* **26**:77-86, 1999
99. Stitik TP et al: Greater trochanter enthesopathy: an example of "short course retinoid enthesopathy": a case report. *Am J Physical Med Rehab* **78**:571, 1999