
Sunscreen use and availability among female collegiate athletes

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Background: Each year more than 250,000 athletes participate on National Collegiate Athletic Association (NCAA) teams. The majority of outdoor NCAA athletes, however, do not use sunscreen on a daily basis. Previous research notes that sunscreen availability represents the main barrier to use among collegiate athletes.

Objective: We sought to explore the effect of sunscreen availability on its application among outdoor collegiate athletes.

Methods: Participants (n = 83) on NCAA Division IA female golf teams were randomized to form treatment and control groups. Treatment group players placed study-supplemented sunscreen in their golf bags and locker rooms during the study period. Both groups completed self-administered surveys at the beginning and end of the 4-week investigation.

Results: The athletes for whom sunscreen was placed in the locker room and bags exhibited a statistically greater use of sunscreen at the end of the study compared with the control group ($P = .01$). Provision of readily available sunscreen in the locker room resulted in an average of 1.13 more days per week of sunscreen use, after adjustment for baseline use ($P = .008$). In addition, players with ready access to sunscreen during competitions increased their reapplication, although not significantly, by nearly 20% ($P = .10$). Sunscreen reapplication during practice did not change for either group.

Limitations: Future investigations should target a larger population of both male and female outdoor collegiate athletes.

Conclusions: The application of sunscreen increased significantly when athletes had easy access to sunscreen during practice and competition. These findings highlight a major opportunity to improve sun-protective behaviors among this vulnerable population. (J Am Acad Dermatol 2012;67:876.e1-6.)

Key words: collegiate athletes; health behavior; outdoor sports; prevention; sun protection; sunscreen.

Skin cancer is the most commonly diagnosed form of malignancy in the United States. As the prevalence of melanoma and nonmelanoma cancers dramatically increase, public health initiatives continue to focus on prevention.¹⁻³ Primary methods of prevention include using broad-spectrum sunscreens, wearing protective clothing, seeking shade, and limiting exposure during peak sun hours.⁴ If implemented during early childhood and adolescence, these preventive practices can

Abbreviations used:

NCAA: National Collegiate Athletic Association
SPF: sun protection factor
UV: ultraviolet

decrease the carcinogenic effects of ultraviolet (UV) radiation.⁵⁻⁸

Among young populations at risk, outdoor collegiate athletes represent a target group for skin

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cancer prevention.⁹ Multiple factors place collegiate athletes at increased risk for sun exposure. Each year more than 250,000 National Collegiate Athletic Association (NCAA) participants experience large levels of UV radiation during lengthy practices and multiple-day tournaments.^{10,11} These competitive outings often take place during peak sun hours without protective shade. In addition, sweating places athletes at an even higher risk, as sweat increases the intensity of UV radiation.¹² Lastly, a majority of outdoor NCAA athletes do not use sunscreen on a daily basis. In one study, 85% of sun-exposed outdoor NCAA athletes reported no sunscreen use in the previous 7 days. Athletes attributed the low application of sunscreen primarily to its unavailability.¹³

Collegiate athletic programs, however, do little to support proper sun protection. Modifying NCAA practice and competition schedules may aid in decreasing an athlete's duration and intensity of UV exposure, but this would require coordination of several hundred unique collegiate athletic programs. Thus, NCAA schedules are unlikely to undergo a wholesale change. Therefore, an athlete's use of sunscreen remains the easiest and most effective method of skin cancer risk reduction.¹⁴ This study seeks to examine the effect of sunscreen availability on sunscreen application among collegiate athletes.

METHODS

Study population

The study population included female athletes on NCAA Division I golf teams from 10 Midwest regional colleges: Ohio (5), Kentucky (1), Indiana (3), and Illinois (1). The study targeted women's golf teams for two main reasons. First, collegiate golfers encounter intense levels of UV radiation exposure during competition.¹⁵ Most golf tournaments take place during peak sun months (August, September, May, and June) and peak sun hours (10 AM–4 PM). Second, tournaments take up to 10 hours to complete, wherein players experience lengthy periods of UV radiation.

Survey and sunscreen distribution methods

All of the recruited golf teams (10) agreed to participate in this 4-week study. Each team's head

coach provided permission for survey distribution. A computer algorithm randomized the 10 teams into two groups (treatment and control) and provided each player with a numeric code to protect confidentiality. Treatment group participants completed surveys and received sunscreen for the study month. Control group participants only completed surveys. Both groups completed the same survey on two separate occasions during the first and last weeks of September.

All subjects in the treatment group were provided sunscreen when they submitted their completed first survey. Each of the treatment teams received one (1-gallon) tub of sun-protection factor (SPF) 30+ sunscreen lotion. A research assistant positioned the sunscreen tub at the entrance of each treatment group team's locker room during an initial

site visit. In addition, each treatment participant received 5 tubes of SPF 30+ sunscreen. Written and verbal directions informed players to use the locker room tub of sunscreen daily and to keep at least one tube of sunscreen in their golf bag at all times. The study, however, did not require players to use the provided sunscreen. Participants in both groups could use any form of sunscreen during the study month.

Each survey contained a detachable cover sheet explaining the voluntary nature and requirements of the study. Completion of the survey implied informed consent. To ensure anonymity, each player received a study number to be placed on both surveys. In addition, a research assistant documented the high temperature and cloud level for all practice and competition days for both study groups. The Medical Institutional Review Board of the University of Cincinnati approved the study.

Survey questions

The survey administered consisted of 6 questions covering the topics of skin type, age, school year, and sunscreen use. The questions contained multiple-choice answers and one of the questions also required the participant to provide a short written response. Recent validation of self-reported sunscreen use supports the implementation of this survey. This survey method of data collection

CAPSULE SUMMARY

- The majority of outdoor National Collegiate Athletic Association (NCAA) Division IA athletes do not use sunscreen on a daily basis.
- Application of sunscreen increases significantly when athletes have ready access to sunscreen during practice and competition.
- More than 250,000 NCAA athletes stand to benefit from increased sunscreen availability, education, and ultraviolet protection.

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