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Skin Cancer and Sun Knowledge Level and Dermatoscopic Examination Results of Outdoor and Indoor Athletes: A Cross-sectional Research

Esma Arslan[1], Havva Hilal Ayvaz Çelik[2], Osman Cinkara[3], Sabriye Ercan[1], Fahriye Esra Başyiğit Gönendi[4], Cem Çetin[1]

[1]Suleyman Demirel University Faculty of Medicine, Department of Sports Medicine, Isparta, Turkey
[2]Suleyman Demirel University Faculty of Medicine, Department of Dermatology and Venereology, Isparta, Turkey
[3]Isparta City Hospital, Clinic of Emergency Medicine, Isparta, Turkey
[4]Suleyman Demirel University Faculty of Sports Sciences, Department of Sports Sciences, Isparta, Turkey

ABSTRACT

Background: Adult athletes' knowledge of skin cancer, the effects of sun rays and sun protection, and their dermatological exposure levels are not known clearly. Particularly, athletes who train outdoors are exposed to sunlight for long periods. This study aimed to determine the knowledge level of adult licensed athletes over 18 years old about sun and skin cancer and to evaluate skin findings by dermatoscopic examination.

Materials and Methods: Adult licensed athletes between the ages of 18-45 in our province were included in the study. Participants' demographic data, sports disciplines, training, and license periods were recorded. Afterward, the "Skin Cancer and Sun Knowledge Scale" was applied to the participants. Volunteers among the participants who filled out the scale were included in the dermatoscopic examination.

Results: Two hundred licensed athletes [126 (63%) male, 74 (37%) female] were included in the study. The mean age of the athletes was 21.44±0.29 years, mean height 174.80±0.66 cm, mean weight 67.86±0.87 kg, mean body mass index 22.07±0.19 kg/m^2, mean training duration 8.66±0.37 hours/week and mean license duration 7.71±0.26 years. Of the participating athletes, 111 (55.5%) train indoors and 89 (44.5%) outdoors. The mean score of all athletes "Skin Cancer and Sun Knowledge Scale" was 13.34±0.22. The indoor athletes' mean score was significantly higher (13.85±0.28 vs 12.72±0.34; p=0.018). Of 40 athletes (indoor athletes n=23; outdoor athletes n=17) who were examined with dermatoscopy, 92.5% (n=37) had melanocytic skin findings, 55% (n=22) had inflammatory skin findings, and 40% (n=16) had non-inflammatory skin findings. In terms of dermatoscopic examination findings, there was no difference between athletes training indoors and outdoors (p>0.05).

Conclusion: It was determined that the level of knowledge of adult athletes in our city about sun and skin cancer is very low. There is a need to increase the knowledge level of all athletes, especially outdoor athletes, about the harmful effects of the sun.

Keywords: Athlete, Skin cancer, Sun, Knowledge, Dermatoscopic examination

Address for Correspondence: Esma Arslan MD, Suleyman Demirel University Faculty of Medicine, Department of Sports Medicine, Isparta, Turkey
Phone: +90 246 211 90 67 **E-mail:** esmaarslan.sdu@gmail.com **ORCID ID:** orcid.org/0000-0001-7097-8619
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Introduction

Sun rays have various positive and negative effects on human health. Among the positive effects of the sun on human health are the synthesis of vitamin D and its contribution to the prevention and treatment of diseases such as psoriasis, eczema, multiple sclerosis, hypertension, diabetes mellitus, and coronary artery disease [1]. In addition to the positive effects of sun rays, there are also negative effects on the skin, especially the development of skin cancer [2].

Skin cancers are the most common type of cancer in the world [3]. While one out of every three cancer diagnoses in the world is skin cancer, it ranks fifth among the most common cancers in Turkey [4]. Considering the epidemiology of skin cancers, it is seen that sun-induced ultraviolet (UV) rays play an important role [5]. It has been reported that the increase in the incidence of skin cancer in the last 20 years is associated with cumulative sun exposure time [6]. Long-term sun exposure, history of sunburn in childhood, Fitzpatrick skin type I-II, red, blond or light brown hair color, blue or green eye color, presence of multiple large nevi and spots, presence of family history of skin cancer for skin cancer counted among the risk factors [7].

Skin cancer screening is a visual, non-invasive screening examination. Only 25% of Americans report having a skin cancer screening examination by a healthcare professional. It has been reported that there is a potential to save 10.2 life years when standardized for every 1,000 people screened when an annual examination is performed [8]. Early diagnosis of cancer cases, especially with screening in risky groups, can contribute to reducing the financial and moral burden of the disease with the chance of early treatment.

Routine exposure of outdoor athletes to UV rays during training and competitions poses a risk for skin cancer. Despite this, athletes do not prefer to apply sunscreen for the fact that it affects their athletic performance, forget to apply it, or hope to tan. In addition, equipment such as sun protective clothing, sunglasses, and hats are not widely used because they are prohibited as per the rules or because they affect the performance of the athlete by restricting their movement [9].

Adult athletes' knowledge of skin cancer, the effects of sun rays and sun protection, and their dermatological exposure levels are not known clearly. The present study aimed to determine the knowledge level of adult licensed athletes over the age of 18 about sun and skin cancer and to evaluate skin findings by dermatoscopic examination. We hypothesize that the level of skin cancer and sun knowledge of the athletes is not sufficient and skin findings related to sun exposure will be more common in dermatoscopic screening in outdoor athletes.

Materials and Methods

The study was approved by the Suleyman Demirel University Faculty of Medicine Clinical Research Ethics Committee with the decision dated 13/2/2020 and decision numbered 32. Athletes were informed about the study. Participants signed the informed consent form. Adult athletes between the ages of 18-45 who do sports under license in our city, which is located at 37.76444° North Parallel and 30.55222° East Meridian coordinates, were included in the study. Descriptive data of the participants, sports disciplines, training, and license periods were recorded. Afterward, the 'Skin Cancer and Sun Knowledge Scale' was applied to the participants face-to-face or online.

Skin Cancer and Sun Knowledge Scale: It is a 25-item scale developed by Day et al. [10] in 2014. The scale includes 15 true-false and 10 multiple-choice questions and has a single-factor structure. Correct choices correspond to 1-point, wrong choices correspond to 0-points. A score between 0 and 25 can be obtained from the scale; It can be interpreted that as the total score increases, the level of knowledge also increases. Scale, sun protection sub-scale (items 1, 4-7, 16-22), tanning sub-scale (items 2-12), skin cancer risk factors sub-scale (items 13-15, 23), Skin Cancer Prevention Sub-Scale (items 15, 24) and the symptoms of skin cancer subscale (item 25). Turkish validity and reliability study of the scale was conducted by Haney et al. [11].

Volunteers among the participants who filled out the scale were included in the dermatoscopic examination by randomization. The dermatoscopic examination is a non-invasive technique used in the evaluation of pigmented (melanocytic and non-melanocytic) skin lesions and various fields of dermatology, including inflammatory disorders, infectious diseases, and hair and nail abnormalities. A digital dermatoscopy is a device that allows magnifications as high as 1000 times and simplifies the process of image storage, analysis, and retrieval [12]. In this context, the athletes who were taken for dermatoscopic examination in the study were examined by a dermatologist with a digital dermatoscopy (PhotoFinder ATBM System with Trichoscale pro, Germany, 2019) and their skin findings were recorded.

Statistical Analysis

SPSS v.22 package program was used for statistical analysis. The Shapiro-Wilk test was used to determine whether the data provided a normal distribution. Since the data were not normally distributed, the Mann-Whitney U test and chi-square test with Monte Carlo correction were used for different analyses. To determine the variables affecting the Skin Cancer and Sun Knowledge Scale score, the forward stepwise method was used in the multiple linear regression model. P-value <0.05 was considered statistically significant. Data are presented as frequency (n), percent (%), and mean $\pm$ standard error.

Results

Skin Cancer and Sun Knowledge Level: To determine the level of skin cancer and sun knowledge, 200 licensed athletes, 126 (63%) male, and 74 (37%) female, were included in the study. The mean age of the athletes is 21.44±0.29 years, mean height 174.80±0.66 cm, mean body weight 67.86±0.87 kg, mean body mass index (BMI) 22.07±0.19 kg/m^2, mean training duration 8.66±0.37 hours/week and mean license duration 7.71±0.26 years. Of the participating athletes, 111 (55.5%; male n=54, female n=57) reported that they trained indoors, and 89 (44.5%; male n=72, female n=17) outdoor training (Table 1).

While 46% (n=92) of all participants reported that they did not have a sunburn in the last 1 year, 30% (n=60) once, 17.5% (n=35) twice, 6.5% (n=13) declared that they had sunburn 3 times or more. In indoor athletes, these rates are respectively; 45.9% (n=51), 26.1% (n=29), 21.6% (n=24), and 6.3% (n=7). These rates in outdoor athletes are respectively; 46.1% (n=41), 34.8% (n=31), 12.4% (n=11), and 6.7% (n=6). There was no difference between the groups (p=0.543).

While there was no history of sunburn in childhood in 44.5% (n=89) of all participants, 15% (n=30) had it once, 12.5% (n=25) twice, and 28% (n=56) reported that they had sunburn 3 times or more. In indoor athletes, these rates are respectively; It was calculated as 40.5% (n=45), 15.3% (n=17), 13.5% (n=15), and 30.6% (n=34). These rates in outdoor athletes are respectively; 49.4% (n=44), 14.6% (n=13), 11.2% (n=10), and 24.7% (n=22). In this context, no difference was found between the groups (p=0.232).

Table 1. Demographic features of the participants

	All (n=200)	Indoor (n=111)	Outdoor (n=89)	p-value
Gender (female/male)	37%/63%	51.4%[a]/48.6%[a]	19.1%[b]/80.9%[b]	0.0001*
Age (year)	21.44±0.29	21.24±0.32	21.69±0.52	0.989
Height (cm)	174.80±0.66	173.72±0.93	176.15±0.94	0.063
Weight (kg)	67.86±0.87	66.89±1.25	69.06±1.18	0.068
BMI (kg/m^2)	22.07±0.19	22.00±0.27	22.17±0.28	0.414
Training time (hour/week)	8.66±0.37	8.78±0.53	8.51±0.51	0.883
License duration (year)	7.71±0.26	8.29±0.41	6.97±0.31	0.014*
Economic status (n, %)				0.154
High	n=46, 23%	n=21, 18.9%	n=25, 28.1%	
Moderate	n=133, 66.5%	n=80, 72.1%	n=53, 59.6%	
Low	n=21, 10.5%	n=10, 9.0%	n=11, 12.3%	
Hair color (n, %)				0.031*
Red	n=2, 1.0%	n=1, 0.9%	n=1, 1.1%	
Blonde	n=16, 8.0%	n=11, 9.9%	n=5, 5.6%	
Light brown	n=37, 18.5%	n=20, 18.0%	n=17, 19.1%	
Brown	n=63, 31.5%	n=43, 38.8%[a]	n=20, 22.5%[b]	
Dark brown/Black	n=82, 41.0%	n=36, 32.4%[a]	n=46, 51.7%[b]	
Eye color (n, %)				0.315
Blue	n=4, 2.0%	n=1, 0.9%	n=3, 3.4%	
Green	n=19, 9.5%	n=12, 10.8%	n=7, 7.9%	
Hazel	n=18, 9.0%	n=11, 9.9%	n=7, 7.9%	
Brown	n=136, 68.0%	n=78, 70.3%	n=58, 65.1%	
Black	n=23, 11.5%	n=9, 8.1%	n=14, 15.7%	
Skin color (n, %)				0.111
Freckled-light	n=4, 2.0%	n=4, 3.6%	n=0, 0%	
Light	n=62, 31%	n=40, 36.1%	n=22, 24.7%	
Light brown	n=70, 35.0%	n=33, 29.7%	n=37, 41.6%	
Brown	n=10, 5.0%	n=6, 5.4%	n=4, 4.5%	
Dark	n=54, 27.0%	n=28, 25.2%	n=26, 29.2%	

Chi-square test and Mann-Whitney U test were used. *p-value is significant at the 0.05 level. [a-b]A difference was determined between the fields with different letter representation, BMI: Body mass index

While 5% (n=10) of all participants had a dermatological disease (acne, allergy, eczema, fungal infection, etc.), the rate of dermatological malignancy in the family history was determined as 1% (n=2). In indoor athletes, these rates are respectively; 4.5% (n=5) and 0.9% (n=1). These rates in outdoor athletes are respectively; it was determined as 5.6% (n=5) and 1.1% (n=1). There was no difference between the groups in terms of a dermatological disease (p=0.754) and a family history of dermatological malignancy (p=0.999).

The distribution of skin types according to the Fitzpatrick classification of the participants is presented in Table 2. There was no difference between the groups in terms of skin type (p=0.312).

The Skin Cancer and Sun Knowledge Scale score of all athletes were determined as 13.34±0.22. The scale score of indoor athletes was determined as 13.85±0.28, and that of outdoor athletes as 12.72±0.34, and the score of indoor athletes was found to be statistically significantly higher (p=0.018). When the subscale scores of the Skin Cancer and Sun Knowledge Scale were examined, the sun protection sub-scale was found to be statistically significant (p=0.011), while no statistically significant difference was found in the other subscales (p>0.05) (Table 3).

In the regression analysis model, the Akaike information criterion value was calculated as 442,406, the intercept coefficient was calculated as 9.274 and the p-value was 0.0001. Thus, female gender, age, economic status, and license duration variables remained in the model (Table 4). While the increase in age and economic status increased the Skin Cancer and Sun Knowledge Scale score, the increase in the license period decreased the scale score. Scale scores of female athletes were significantly higher than male athletes. On the other hand, the effect of indoor or outdoor training on the Skin Cancer and Sun Knowledge Scale score was not determined.

Dermatoscopic Examination Findings

A total of 40 athletes, 45.2% male, and 54.8% female, with a mean age of 23.10±0.94 years, participated in the dermatoscopic examination. While 23 of them were indoor athletes (21.1% male, 78.9% female; mean age 21.09±0.61 years), 17 of them were outdoor

Table 2. Distribution of skin types of participants according to the Fitzpatrick classification

	Skin type	All (n=200)	Indoor (n=111)	Outdoor (n=89)	p-value
I	Always burns easily, absolutely no tanning	n=12, 6%	n=10, 9%	n=2, 2.2%	0.312
II	Usually burns easily and tans very little	n=39, 19.5%	n=22, 19.8%	n=17, 19.1%	
III	Burns, but turns tan over time	n=50, 25%	n=30, 27.1%	n=20, 22.5%	
IV	Burns very little, tans easily	n=52, 26%	n=25, 22.5%	n=27, 30.4%	
V	Tans quickly and does not get sunburned	n=42, 21%	n=21, 18.9%	n=21, 23.6%	
VI	Sunburn does not occur, but allergies can occur	n=5, 2.5%	n=3, 2.7%	n=2, 2.2%	

The chi-square test was used

Table 3. Skin Cancer and Sun Knowledge Scale and subscale scores

	All (n=200)	Indoor (n=111)	Outdoor (n=89)	p-value
Skin Cancer and Sun Knowledge Scale	13.34±0.22	13.85±0.28	12.72±0.34	0.018*
Sun protection subscale	6.28±0.12	6.55±0.16	5.93±0.19	0.011*
Tanning subscale	6.39±0.15	6.62±0.19	6.10±0.24	0.087
Skin cancer risk factors subscale	2.57±0.07	2.59±0.10	2.54±0.11	0.752
Skin cancer prevention subscale	1.07±0.04	1.05±0.05	1.09±0.05	0.633
Symptoms of skin cancer subscale	0.41±0.03	0.45±0.05	0.36±0.05	0.194

Mann-Whitney U test was used. *The p-value is significant at the 0.05 level

Table 4. Variables affecting the Skin Cancer and Sun Knowledge Scale score

	Regression coefficients	Significance	Importance
Female	4,768	0.001	0.441
Age	0.221	0.012	0.225
Economic status	1,533	0.028	0.173
License duration	1,132	0.035	0.160

Multiple linear regression model was used. The p-value was considered significant at the 0.05 level

athletes (83.3% male, 16.7% female; mean age was 25.82±1.88 years). According to the Fitzpatrick classification, skin types of indoor athletes who examined with dermatoscopy were 4.3% Type I, 65.3% Type II and 30.4% Type III. The distribution among outdoor athletes was 11.8% Type I, 41.2% Type II and 47% Type III, respectively.

When the descriptive characteristics of the athletes included in the dermatoscopic examination were grouped according to their indoor or outdoor training status, a difference was determined in terms of gender (p=0.001), BMI (p=0.014) and eye color (p=0.021). Age (p=0.062), license period (p=0.346), weekly training time (p=0.367), Skin Cancer and Sun Knowledge Scale score (p=0.078), skin type (p=0.338), economic status (p=0.095), hair color (p=0.120), skin color (p=0.863), history of sunburn in the last 1 year (p=0.117), history of sunburn in childhood (p=0.691), presence of known dermatological disease (p=0.387) and family history of dermatological malignancy (p=1,000) were not different.

The athletes who participated in the dermatoscopic examination were asked about their use of sunscreen. 70% (n=28; indoor athletes: n=17, 73.9%; outdoor athletes: n=11, 64.7%) of these athletes used sunscreen only swimming in the sea, 20% (n=8; indoor athletes: n=4, 17.4%; outdoor athletes: n=4, 23.5%) when going out in summer, and 10% (n=4; indoor athletes: n=2, 8.7%; outdoor athletes: n=2, 11.8%) as they remember. There was no difference between the groups in terms of sunscreen use (p=0.884).

Of 40 athletes who were examined with dermatoscopy, melanocytic skin findings were found in 92.5% (n=37), inflammatory skin findings were found in 55% (n=22) and non-inflammatory skin findings were found in 40% (n=16). In terms of dermatoscopic examination findings, there was no difference between the indoor and outdoor athletes (p>0.05), (Table 5).

The distribution regions of the skin findings detected in the dermatoscopic examination of the body were presented in Table 6. There was no difference between the groups (p>0.05).

Since it was determined in the regression analysis results that the variables of the female gender, age, economic status, and license duration affected the Skin Cancer and Sun Knowledge Scale score, the dermatoscopic examination findings were also examined according to the subgroups divided into two, which were formed

Table 5. Dermatoscopic examination findings

	All (n=40)	**Indoor (n=23)**	**Outdoor (n=17)**	**p-value**
Melanocytic skin findings	n=37, 92.5%	n=21, 91.3%	n=16, 94.1%	1,000
Junctional nevi	n=18, 48.6%	n=12, 57.1%	n=6, 37.5%	
Compound nevi	n=13, 35.1%	n=6, 28.6%	n=7, 43.8%	
Dysplastic nevi	n=10, 27.0%	n=5, 23.8%	n=5, 31.3%	
Dermal nevi	n=6, 16.2%	n=4, 19.0%	n=2, 12.5%	
Conjenital nevi	n=2, 5.4%	n=1, 4.8%	n=1, 6.3%	
Blue nevi	n=1, 2.7%	n=1, 4.8%	n=0, 0%	
Inflammatory skin findings	n=22, 55%	n =14, 60.9%	n=8, 47.1%	0.523
Acne vulgaris	n=11, 50%	n=8, 57.1%	n=3, 37.5%	
Rosacea	n=6, 27.3%	n=3, 21.4%	n=3, 37.5%	
Keratosis pilaris	n=5, 22.7%	n=1, 7.1%	n=4, 50%	
Eczema	n=2, 9.1%	n=1, 7.1%	n=1, 12.5%	
Folliculitis	n=2, 9.1%	n=1, 7.1%	n=1, 12.5%	
Psoriasis	n=1, 4.5%	n=1, 7.1%	n=0, 0%	
Non-inflammatory skin findings	n=16, 40%	n=9, 39.1%	n=7, 41.2%	1,000
Freckling	n=5, 31.3%	n=3, 33.3%	n=2, 28.6%	
Stria	n=3, 18.8%	n=1, 11.1%	n=2, 28.6%	
Cafe-au-lait	n=2, 12.5%	n=2, 22.2%	n=0, 0%	
Pityriasis versicolor	n=2, 12.5%	n=0, 0%	n=2, 28.6%	
Actinic keratosis	n=1, 6.2 %	n=0, 0%	n=1, 14.2%	
Telogen effluvium	n=1, 6.2%	n=1, 11.1%	n=0, 0%	
Dermatofibroma	n=1, 6.2%	n=1, 11.1%	n=0, 0%	
Epidermal nevus	n=1, 6.2%	n=1, 11.1%	n=0, 0%	

The chi-square test was used. n is larger than the number of samples

Table 6. Distribution regions of skin findings in the body				
	All (n=40)	**Indoor (n=23)**	**Outdoor (n=17)**	**p-value**
Melanocytic skin findings				0.897
Trunk	n=16, 43.2%	n=9, 42.9%	n=7, 43.8%	
Back	n=15, 40.5%	n=10, 47.6%	n=5, 31.3%	
Face	n=12, 32.4%	n=8, 38.1%	n=4, 25%	
Upper extremity	n=8, 21.6%	n=4, 19.0%	n=4, 25%	
Lower extremity	n=1, 2.7%	n=1, 4.8%	n=0, 0%	
Inflammatory skin findings				0.792
Face	n=16, 72.7%	n=11, 78.6%	n=5, 62.5%	
Back	n=10, 45.5%	n=6, 42.9%	n=4, 50.0%	
Upper extremity	n=6, 27.3%	n=3, 21.4%	n=3, 37.5%	
Lower extremity	n=4, 18.2%	n=2, 14.3%	n=2, 25.0%	
Non-inflammatory skin findings				0.742
Trunk	n=5, 31.3%	n=2, 22.2%	n=3, 42.9%	
Face	n=5, 31.3%	n=4, 44.4%	n=2, 28.6%	
Back	n=5, 31.3%	n=4, 44.4%	n=1, 14.3%	
Scalp	n=3, 18.8%	n=2, 22.2%	n=1, 14.3%	
Lower extremity	n=2, 12.5%	n=2, 22.2%	n=0, 0%	
The chi-square test was used. n is larger than the number of samples				

by considering the median values of these variables in the data set. There was no difference in terms of dermatoscopic examination findings according to gender, age, license period, economic status, or scale score subgroups (p>0.05).

Discussion

In our study, the Skin Cancer and Sun Knowledge Scale score of indoor athletes were found to be statistically significantly higher. It was observed that the variables of the female gender, age, economic status, and license period affected the Skin Cancer and Sun Knowledge Scale score. In terms of dermatoscopic examination findings, there was no difference between indoor and outdoor athletes.

Population-based studies had shown that the younger population lacks knowledge about sun protection behaviors and signs of skin cancer [11]. Kartal and Karakaş [4], using the Skin Cancer and Sun Knowledge Scale, found the average knowledge level score of seasonal agricultural workers women to be 10.38. In our study, the average score of all athletes participating in the Skin Cancer and Sun Knowledge Scale was determined as 13.34.

In a study by Hobbs et al. [9], on 343 university athletes, they found that only 20.7% of the participants knew that spending time outdoors increases the risk of skin cancer. They reported that the individuals participating in their study did not have basic knowledge about skin cancer and sun protection, and interpreted these results as a finding consistent with previous research with university students [9]. In our study, the fact that the participants gave almost half the wrong answers to the questions on the knowledge scale made us think that there are deficiencies in skin cancer and sun knowledge in line with the literature.

In our study, 20% of the athletes who participated in the survey were included in the dermatoscopic examination. Bagatti et al. [8] found that individuals participating in their study had not received any health care for their skin in the last 6 months, and most of them had no intention of having their skin examined in the future. De Castro-Maqueda et al. [13] reported that 83.3% of elite water sports athletes did not have a medical skin examination and 87.5% did not self-examine their skin. In a study of Spanish cyclists by Doncel Molinero et al. [14], it was found that 61% of the participants did not examine their skin regularly. In another study, it was stated that 94.5% of university beach handball players did not examine their skin in the last 1 year [15]. These data suggest that there is a need to increase the level of awareness of people about the benefits that can be achieved with dermatoscopic examination and to expand routine controls.

Del Boz et al. [16] found skin cancer in 10.7% of golfers and actinic keratosis in 40% of golfers in a study they conducted with golf players and employees at golf courses in the south of Spain. No skin cancer was diagnosed in the indoor workers of the same facility, and the rate of actinic keratosis was only 1.7% [16]. In our study, while melanocytic skin findings were found in 92.5% of the athletes, inflammatory skin findings were found in 55%, and

non-inflammatory skin findings were detected in 40% of the athletes who were examined by dermatoscopic examination, no difference was found between the indoor and outdoor athletes. The fact that the mean age of the athletes in our study was lower than the mean age (51.9 years) of the participants in Del Boz et al.'s [16] study is an important variable that may cause a difference in the duration of sun exposure and therefore the appearance of lesions.

In a review by Gilaberte et al. [17], they emphasized that sunscreen use was reported as insufficient in various studies with athletes. Although sunscreen is the most commonly used form of photoprotection among elite water athletes from 30 countries, aged 16-30, 22.5% of the participants never used sunscreen, and 31.1% did not reapply it after 2 hours [13]. In the De Castro-Maqueda et al. [15] study, about half of the beach handball players never applied sunscreen during training or competition. In our study, 70% of the athletes who participated in the dermatoscopic examination used sunscreen only swimming in the sea, 20% when going out in summer, and 10% as they remember.

Study Limitations

The limitations of the study were the cross-sectional design of the study and the fact that the lesions that could develop in case of increased cumulative sun exposure in later ages could not be detected due to the young age of the participants.

Conclusion

In light of the data, we obtained from our study, it was determined that the level of knowledge of the athletes in the adult age group about sun and skin cancer is low. There is a need to increase the knowledge level of all athletes, especially outdoor athletes, about the harmful effects of the sun.

It may be beneficial to provide training to increase the level of knowledge of the athletes, to explain the preventive measures, to question the sun exposure of the athletes during routine examinations by being aware of the risks related to skin cancer, and to guide them for advanced dermatological examination in case of suspicious lesions.

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Ethics

Ethics Committee Approval: The study was approved by the Suleyman Demirel University Faculty of Medicine Clinical Research Ethics Committee with the decision dated 13.02.2020 and decision numbered 32.

Informed Consent: Participants signed the informed consent form.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: E.A., H.H.A.Ç., Concept: E.A., H.H.A.Ç., S.E., C.Ç., Design: E.A., H.H.A.Ç., S.E., C.Ç., Data Collection or Processing: E.A., H.H.A.Ç., O.C., F.E.B.G., Analysis or Interpretation: E.A., O.C., S.E., Literature Search: E.A., O.C., S.E., Writing: E.A., H.H.A.Ç., S.E., C.Ç.

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