



Case Study

Volume 15 Issue 2 April 2025
DOI: 10.19080/JOJCS.2025.15.555906

JOJ Case Stud

Copyright © All rights are reserved by Rikhsiev Zafar

The Use of Infrared Photon Pulse Therapy in Athletes with Pathological T Waves on the ECG and Tendinitis of the Knee Joint



Rikhsiev Zafar*

Candidate of Medical Sciences, Rehabilitation Specialist, Cardiologist, Sports Medicine Specialist, Uzbekistan

Submission: March 17, 2025; **Published:** April 03, 2025

***Corresponding author:** Rikhsiev Zafar, Candidate of Medical Sciences, Rehabilitation Specialist, Cardiologist, Sports Medicine Specialist, Uzbekistan

Keywords: Infrared photon pulse therapy; Lamps coated with functional ceramics; Sports pathology; Tendinitis of the knee joint, Pathological T wave on the ECG

Introduction

The T wave in the QT interval on the ECG reflects the repolarization phase of the action potential and the function of potassium channels to move potassium ions out of the cell. Excessive exercise can alter the function of ion channels in cardiomyocytes, creating an abnormal electrophysiological environment that predisposes to lethal arrhythmias and sudden death [1,2].

The appearance of a pathological T wave on the ECG is one of the signs of impaired ventricular repolarization. If this sports pathology is detected, athletes are not allowed to participate in competitions.

Tendonitis of the knee joint is a common sports pathology among tennis players, karatekas and football players. Frequent relapses of pain in the knee joint during difficult matches and fights force athletes to withdraw from tournaments and complete sports activities.

Therefore, the development of effective methods for the prevention and treatment of these pathologies remains relevant.

Purpose of the study: To study the effect of infrared photon-pulsed light on the ventricular repolarization phase in athletes with a pathological T wave on the ECG and on pain syndrome in athletes with tendinitis of the knee joint.

Material and Treatment Methods

Under supervision were domestic and foreign tennis players, karatekas, football players.

Group 1 included athletes with a pathological T wave, which was recorded on an ECG after training and competitive matches and fights. The T wave was considered pathological if it was flattened, inverted, in leads in which it had normal height and polarity.

The T wave was designated as inverted if in leads I, II, aVL, and V2 - V6 the amplitude of the negative T wave was from 1 to 5mm; and deep negative, if in these leads the amplitude of negative T is from 5mm to 10mm.

A comprehensive examination of these athletes revealed no signs of inflammation (CRP, general blood test), myocardial ischemia (stress ECG), hypertrophy, dilatation of the left ventricle, heart valve defects, hypertrophic cardiomyopathy (echocardiography), electrolyte disorders (hypo, hyperkalemia, hypo, hypercalcemia, hypomagnesemia).

They took standard medication metabolic therapy (vitamins, panangin, mexidol). However, during competitions, after difficult matches, fights, pathological T waves were recorded on the ECG.

Group 2 included athletes with grade 1 knee tendonitis. They had relapses of pain in the knee joint during matches, fights, although they received standard therapy (knee braces, local cold, non-steroidal anti-inflammatory drugs, massage). They could not compete to their full potential and withdrew from tournaments due to pain in the knee joint.

In the sessions of infrared photon pulse therapy [3,4], local emitters and the Surya device with lamps coated with 4 types of

functional ceramics RC GI, ZB, KL were used.

Treatment Results

In athletes of group 1 who took infrared photon pulse therapy during the competitive period, after matches and fights, pathological T waves were not recorded on the ECG.

During the observation period, the majority of athletes in group 2 who took infrared photon pulse therapy did not experience relapses of pain in the knee joint during matches. Only 4 athletes complained of mild pain in the knee joint during matches, fights, but this did not prevent them from winning.

Conclusion

a) Infrared photon-pulsed light has a regenerative effect on cardiomyocytes with ion channel dysfunction that occurs in athletes due to excessive physical stress

b) Infrared photon-pulsed light has an analgesic, anti-inflammatory, regenerative effect on damaged ligaments in

athletes with knee tendonitis.

c) Infrared photon pulse therapy can be used as a means of preventing and treating tendinitis of the knee joint and ECG signs of impaired ventricular repolarization in athletes during the competitive period.

References

1. Bockeria OL, Akhobekov AA (2014) disturbance of heart rhythm. *Annals of Arrhythmology* 11(3): 176-184.
2. D'Ascenzi F, Valentini F, Pistoresi S, Frascaro F, Piu P, et al. (2022) Causes of sudden cardiac death in young athletes and non-athletes: systematic review and meta-analysis: Sudden cardiac death in the young. *Trends Cardiovasc Med* 32(5): 299-308.
3. Rakhimov R Kh (2023) Functional ceramics and its applications. Infrared radiation – a soft approach to the treatment of diseases. Dusseldorf: Lambert, p. 154.
4. Zafar I Rikhsiev (2021) The Use of Infrared Resonance Therapy (IRT) in the Rehabilitation of Sports Pathology. *Global Journal of Nanomedicine* 5(3).



This work is licensed under Creative Commons Attribution 4.0 License
DOI: [10.19080/JOJCS.2025.15.555906](https://doi.org/10.19080/JOJCS.2025.15.555906)

Your next submission with Juniper Publishers will reach you the below assets

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats
(Pdf, E-pub, Full Text, Audio)
- Unceasing customer service

Track the below URL for one-step submission

<https://juniperpublishers.com/online-submission.php>