



Original Research

Designing a New Smart Training Tool for Ball Sports in Order to Use at Pandemic Covid-19 Period

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ABSTRACT

Creation a relationship between athletes and physical closeness between them can increase the risk of coronavirus at during team and group training. Therefore, the aim of the present study was to design a new smart training tool for ball sports in order to use at pandemic covid-19 period. This training tool includes 4 fixed mechanical rods to install the net on it, a movable column that can be adjusted at different angles, and 3 fixed mechanical rods to keep smart tool fixed on the ground. Also, another mechanism was used in this tool was a complex of electronic components which can

count all impact there. The smart training tool can be a very useful tool in order to continue exercise program during the covid-19 pandemic and it can provide a healthy environment for athletes.

Keywords: Training, Smart, Covid-19, Technology

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INTRODUCTION

Most of the sport events were stopped during COVID-19 pandemic [1]. Physical contact between different athletes can lead to the risk of coronavirus transmission during sport events [2]. Due to this, the spread of the coronavirus has created restrictions for all athletes and the general public, and they are forced to exercise individually to keep their health. Therefore, they need for advanced training tools to perform exercises in individual and environmental conditions in order to maintain good health at all times.

For example, Kraus et al., (2020), encouraged creativity and innovation in the production of new sports equipment as the only way to overcome crises such as the COVID-19 [3]. Also, Jafarnezhadgero et al., (2021) designed a new anti-microbe and virus Volleyball ball to prevent virus distribution among Volleyball athletes [4]. The use of nano-silver in the ball industry can be used to kill a variety of microbes and viruses [4]. However, further longitudinal and experimental studies were needed to better established the positive and negative effects of new anti-microbe and virus volleyball ball [4]. However, other sport training tools will be needed to design during Corona virus pandemic course. Therefore, the aim of the present study was to design a smart training tool for using in the Corona virus pandemic or similar conditions as well.

MATERIAL AND METHODS

Structure of smart training tool

Schematic of this smart exercise tool includes 4 fixed mechanical rods was demonstrated at Figure 1. Also, this device has an adjustable movable column for performing various technical and specialized movements with all sports balls. This smart device include 3 fixed mechanical rods for connecting to ground.



Figure 1. Smart exercise tool structure

Electronic equipment

This smart device include an impact sensors to count all of the passes and shots. Finally, the athlete and the coach will be aware of their training condition. So this training tool include impact sensor (FSR model, China) and other electronic components such as Arduino nano model (Power supply, China), and Bluetooth transmitter and receiver (10 ohm resistance) according to Figure 2.



Figure 2. Ten ohm resistance (<https://daneshjookit.com>) and Bluetooth majol (<https://buybestelectronic.com>)



Figure 4. The final schematic Smart training tool

DISCUSSION

The aim of the present study was to design a smart training tool in order to use during Covid pandemic and similar conditions. With this tool, athletes and even the general people no longer have to stop training during the coronavirus. With this smart training tool, athletes can perform all their training movements with different sport balls (e.g., passes, shots, heads, and etc.). Also unique feature this training tool is smart, which makes training more attractive for athletes. With this, athletes can be informed of their training status and progress. The smart exercise tool can also be adjusted to different angles and for all ball sports. In line with the findings of the present study, Yuefan et al. (2018) designed antibacterial sports equipment [5]. Our designed sport tool is a suitable training device for most of the athletes and the general public in order to perform sports exercises during the coronavirus and similar conditions in the future.

CONCLUSION

The smart training tool can be a very useful tool in order to continue exercise program during the covid-19 pandemic and it can provide a healthy environment for athletes.

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طراحی ابزار تمرینی جدید هوشمند ورزش‌های توپی به منظور استفاده در دوره فراگیری کرونا ویروس

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چکیده

ایجاد ارتباط بین ورزشکاران و نزدیکی فیزیکی بین آن‌ها می‌تواند خطر ابتلا به ویروس کرونا را طی تمرینات تیمی افزایش دهد. بنابراین، هدف از پژوهش حاضر طراحی ابزار تمرینی هوشمند جدید جهت استفاده در ورزش‌های توپی در دوره همه‌گیری ویروس کرونا بود. این ابزار تمرینی شامل ۴ میله مکانیکی ثابت برای نصب تور روی صفحه، یک ستون متحرک با قابلیت تنظیم در زوایای مختلف و ۳ میله مکانیکی ثابت برای ثابت نگه داشتن ابزار هوشمند بر روی زمین می‌باشد. همچنین، مکانیسم دیگری که در این ابزار استفاده شد، مجموعه‌ای از قطعات الکترونیکی می‌باشد، که قادر است تمام ضربات وارده به این ابزار را شمارش کنند. ابزار تمرینی هوشمند در نظر گرفته شده در زمان همه‌گیری کووید-۱۹ می‌تواند ابزار بسیار مفیدی برای همه ورزشکاران توپی و عموم مردم باشد تا تمامی تمرینات ورزشی تخصصی خود را به صورت انفرادی با هیجان بیشتر و در هر محیطی سالم انجام دهند.

واژه‌های کلیدی: تمرین، هوشمند، کرونا ویروس، تکنولوژی