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Human Kinetics
CASE STUDY 5

Environmental Protection in Nature-Based Sport Events: The Case of Olympus Marathon

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Mountain running events have increased, making efforts toward a more environmentally sustainable organized context. This case study examines the environmental orientation and the carbon offsetting behavioral intentions among participants of the Olympus Marathon, the annual mountain running event in Mount Olympus, Greece. The organizers of Olympus Marathon are interested in developing an environmentally friendlier approach to the event by implementing a new pro-environmental plan which targets the reduction of carbon dioxide emissions generated by their consumers' (runners) travel behaviors. This case study provides students the opportunity to (a) analyze mountain runners' environmental orientation to justify the implementation of pro-environmental practices in nature-based sport events, (b) investigate mountain runners' voluntary carbon offsetting behavioral intentions, and (c) develop effective a voluntary carbon offsetting emission marketing plan to support pro-environmental actions in sport events.

Keywords: mountain running, voluntary carbon offsetting, pro-environmental planning, zero-carbon runners

Dionysis, the event manager of Olympus Marathon, pondered the growth the running event has observed since its inception in 2004. Specifically, Olympus Marathon is an annual, international mountain running event at the Mount Olympus, held at the end of June. The race starts from the ruins of the City of Dion, near the town of Litochoro, and continues for 44 km (Olympus Marathon, 2021). Runners pass by the highest point of 2,780 m, called the "Throne of Zeus" and run about 21 km at an average of 2,800-m altitude on the mountain's eastern side. Finally, the race finishes in Litochoro, a town, located 300 m above sea level.

Mount Olympus is the highest mountain in Greece. Its highest peak reaches 9,570 ft (2,917 m). It is a preserved national park and is listed as a "World Natural Heritage Monument" by United Nations Educational, Scientific, and Cultural Organization (UNESCO; Kaltsas et al., 2018; Papageorgiou & Kassioumis, 2005). Mount Olympus constitutes a symbolic place for Greeks, as, in ancient Greece, people ascended every year to honor and sacrifice for Zeus. Accordingly, Mount Olympus has historical popularity as it is the Greek mythical "Mountain of Gods." In addition, Mount Olympus is one of Greece's most significant archaeological sites (Papageorgiou, 2015). Its natural beauty includes aesthetic views, including massifs and majestic mountains, and it has been a destination that induces awe and admiration by visitors (UNESCO, 2021). Therefore, UNESCO 2021 declared Mount Olympus a "Biosphere Preserve." Furthermore, the unique National Park of Olympus has been recognized as an outstanding, timeless, region value (Kaltsas et al., 2018; Papageorgiou, 2015).

The first race took place in 2004, featuring 104 participants, and in 2017 reached 877. However, the 2018 race experienced a participation decline of nearly 100 runners (Olympus Marathon, 2022). COVID certainly posed some challenges for the event managers as a lot of sport events were canceled in Greece. "Given the COVID impact and because discussion about environmental exposure and connection became more prominent during the lockdown, given that people needed to spend time outdoors due to the pandemic, Dionysis had more time to think about the real impact of the event on the environment." During this process, Dionysis thought how this group of runners, who registered to do the Olympus marathon race at a UNESCO site, might be more sensitive toward nature.

Furthermore, with the global challenges related to climate change, sport, and the pandemic, the event manager of Olympus Marathon, namely, Dionysis, wondered how this event could impact environmentally related causes. Dionysis became aware of the environmental restoration that occurred during the lockdown and the significantly large reduction of greenhouse gas emissions in the atmosphere due to the cancellation of the sport events. Specifically, the cancellation of the sport events reduced sport event participants' ecological footprint. During the lockdown, the sport consumers did not travel to participate in sport events (Triantafyllidis et al., 2018; Triantafyllidis & Davakos, 2019), which contributed to a global reduction of emissions. Therefore, Dionysis wanted to understand how the Olympus Marathon participants perceived the environmental restoration during the pandemic. Dionysis, however, had no idea whether the runners of his race would even have an ecological identity and whether their connection to the running place of Mount Olympus would even influence their perceptions and actions toward protecting the environment. Not knowing what environmentally friendly outcomes the event participants may be interested in supporting, the Dionysis went on a research journey to identify ways the race participants could help the environment.

Background for Environmentally Friendly Outcomes Among Sport Event Participants

As Dionysis started to do his research, he found a few practices that event participants may be interested in supporting. For example, behaviors related to recycling waste from the race, leaving no waste behind, and offsetting carbon emissions were the most prevalent ones for event participants in the literature (Cunningham et al.,

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2020; Triantafyllidis & Kaplanidou, 2019). So, Dionysis thought that since the event owners are already applying recycling efforts, such as recycling stations across the race, the next potential target outcome would be carbon offsetting emissions for the event race participants. However, since he was not sure, he needed to do more research on the connection between nature-based sport events and environmental protection practices. Dionysis also found that some concepts are of importance to sport event participants. These included place attachment, nature bonding, and ecological identity. Place attachment is defined as the emotional connection between a person and a place (Kyle et al., 2005). Nature bonding captures the bond of a person with nature, and ecological identity is defined as people's sense of connection with some part of the nonhuman world that influences the way people perceive and behave toward environmental protection (Clayton et al., 2016; Halpenny, 2010).

Nature-Based Sport Events and Environmental Protection Practices

As Dionysis kept searching the literature, he found that the connection between nature-based sport events and environmental protection has recently received attention in the sport management literature due to people's systemic awareness of environmental problems (Cunningham et al., 2020; Du Preez & Heath, 2016; Sato et al., 2017; Triantafyllidis & Kaplanidou, 2019). Dionysis observed understanding the relationship between nature-based sport event participants' environmental perspectives, and their willingness to engage in pro-environmental behaviors that enhance environmental protection programs of sport organizations (Trail & McCullough, 2020; Triantafyllidis & Kaplanidou, 2019; Wicker, 2019) was rather important. Environmental perspectives can be understood by exploring people's connection with the natural environment, their thoughts and feelings about the nature-based place where sport events are happening, and the degree of their ecological identity. As Dionysis kept reading, he found that another factor determining people's environmental perspectives is their ecological identity. Essentially, how people see themselves protecting the natural environment reflects their ecological identity. Clayton et al. (2016) defined ecological identity as people's sense of connection with some part of the nonhuman world that influences the way people perceive and behave toward environmental protection. Furthermore, ecological identity captures beliefs about how environmental quality plays a crucial part in human survival and well-being (Clayton et al., 2016; Whitmarsh & O'Neill, 2010).

For example, participating in mountain running events may show elevated ecological identity due to consistent exposure, interaction, and bonding with the natural environment (Triantafyllidis & Kaplanidou, 2019). According to Dutcher et al. (2007), interaction with nature and the frequent exposure to natural resources can affect how people perceive the natural world and develop beliefs that nature is an integral part of who they are. Being a sport event participant who heavily relies on nature to execute their activity may activate ecological identity elements that have the potential to influence voluntary carbon offsetting (VCO) behavioral intentions (Du Preez & Heath, 2016; Peterson et al., 2013; Sato et al., 2017). The environmental perspective of participants could be a strong foundation that supports people's behavioral intentions toward VCO emissions.

Dionysis further found that transportation is an operation that generates large amounts of CO_2 emissions. He pondered about the Mount Olympus race. Most of the participants (95%) came by driving their cars which meant that their transportation mode had been the primary source of CO_2 emissions. Dionysis found that medium-sized single-occupancy vehicles generate between 8 and 12 kg/CO_2 emissions per mile, rather than using public transportation, producing approximately 70% less CO_2 emissions per mile (Triantafyllidis, Ries, & Kaplanidou, 2018). Single-occupancy vehicles may be standard among sport event participants, making them feel more obliged to offset their emissions.

Furthermore, sport event participants may travel rather long distances (e.g., more than 80 miles) to participate in sport events of their choice (Triantafyllidis et al., 2018; Triantafyllidis & Davakos, 2019). Traveling long distances to participate in sport events suggests a higher motivation for running. These data were puzzling to him and made him think about what he needed to do to offset the negative impact on the nature race trail his event was creating. Dionysis also found evidence that nature-based sport event participation can positively enhance participants' behavioral intentions to engage in specific pro-environmental practices (Filo et al., 2011). For example, outdoor runners can be motivated by their interest in running and the event's outdoor and natural characteristics to donate toward environmental initiatives to reduce the human-induced environmental impacts (Triantafyllidis & Kaplanidou, 2019). Dionysis thought: Could nature-based sport event participants be a good market for environmental protection programs such as VCO practices? (Lu & Wang, 2018; Triantafyllidis & Kaplanidou, 2019). He needed more information about VCO practices and what factors could influence these outcomes.

Voluntary Carbon Offsetting Practices

As Dionysis, looked at the literature about VCO practices, he found that it is considered a pro-environmental strategy with a significant positive contribution to global environmental issues (Kim et al., 2016; Zhang et al., 2019). VCO behaviors involve consumers and organizations contributing financially toward nonprofit organizations that use technological mechanisms to reduce the CO_2 emissions generated during an activity, such as transportation and operations (Triantafyllidis & Kaplanidou, 2019). For example, participants traveling to the event emit the most considerable CO_2 into the atmosphere in sport events. In addition, the sport event's operations that emit CO_2 include the employees' transportation to the event place, especially when events take place in natural environments located miles away from urban areas, as well as the transport of the equipment needed for the event, the concessions, and the merchandise. These actions aim to offset the amount of CO_2 emissions generated in consumers' natural environment (Triantafyllidis & Kaplanidou, 2019). Therefore, VCO practices constitute a pro-environmental mechanism that aims to control and reduce CO_2 emissions (Mann et al., 2017; Wiedmann & Minx, 2008).

Voluntary carbon offsetting consists of voluntary compensation practices toward actions that reduce the CO_2 emissions generated by human and industrial activities (Lu & Wang, 2018). Therefore, it constitutes an effective strategy for mitigating global environmental problems, such as human-induced climate change (Whitmarsh & O'Neill, 2010). So, it is likely that an individual's VCO behavior can help reduce the quantity of CO_2 emissions in the atmosphere (Lu & Wang, 2018). Practically, people's VCO behaviors aim to neutralize the CO_2 emissions caused by their actions in one sector (e.g., transportation, sport participation, and consumption of products) through compensation in another industry (e.g., investment in energy-efficient structures and activities; Lu & Wang, 2018).

The VCO practices primarily improve air quality, which can play an essential role in mountain trail runners' performance and health and well-being (Babakhani et al., 2017; Triantafyllidis & Kaplanidou, 2019) or other nature-based sport events. Dionysis thought that the runners must have some special value system tuned for protecting the environment where they run. This thought came from studies he found about how ecological identity reflects people's awareness and concern toward environmental issues (Walton & Jones, 2018) and, therefore, form a positive environmental perspective. More specifically, an ecological identity is shaped by how individuals know the natural environment's problems (Tam & Chan, 2018). Dionysis thought that ecological identity is one factor, but how about runners' attachment to the place? How close did the participants feel to the place of the race? Based on studies that focused on pro-environmental behaviors, people's attachment to environmentally preserved areas (e.g., natural parks) is essential and can influence their pro-environmental behavioral intentions and practices due to the value people place on such environments (Du Preez & Heath, 2016; Kyle et al., 2005). Based on environmental psychology, place attachment is the emotional connection between a person and a place (Halpenny, 2010; Kyle et al., 2005). In addition, the emotional affinity of a person to nature refers to nature bonding. For example, a person's attachment to the natural environment can encourage them to protect it and engage in pro-environmental behaviors, such as VCO. The difference between place attachment and nature bonding is that place attachment captures the symbolic meanings of a person's experiences with the place. In contrast, nature bonding captures the bond of a person with nature.

All this research made Dionysis skeptical about how he could leverage the event participation to impact the environment positively. He did not know what to do. He thought of what he read and the key concepts he discovered related to runners' place attachment, ecological identity, and VCO intentions. Since he had the emails of the runners who participated in the most recent race, he thought he needed to collect some data to explore how runners felt about place attachment, their ecological identity, and their VCO intentions.

Dionysis collected online surveys from the participants and asked questions about their motivation toward running, attachment with the place of the race, bonding nature, ecological identity, and VCO intentions. Demographic questions were also asked to capture runners' profile characteristics.

Demographic of Olympus Marathon Runners

The data were from the 2017 Olympus Marathon participant email database, which featured 877 mountain runners. Most of the participants were men (84.2%). Their ages ranged from 18 to 62 years old, with a mean age of 40.1 years old ($SD = 8.98$). In terms of highest education, 17.6% of participants had graduated from high school, 27.9% had a bachelor's degree in higher education, 26.5% had a master's degree, and 4.9% had completed a doctoral degree. Most respondents were White (98.5%), partnered or married (71.2%), with a 15,001 Euros or more annual household income (45.5%).

Running Motivation, Place Attachment, Nature Bonding, Ecological Identity, and VCO Intentions of Olympus Marathon Runners

Dionysis measured the participants' motivation toward running, place attachment, nature bonding, ecological identity, and VCO intentions, as shown in Table 1.

Looking at the data, Dionysis thought of how he could bring about behavioral changes that could make his event runners donate to offset their carbon emissions. As he pondered the data, he thought: Could there be a relationship between a person's attachment to a place, ecological identity, and VCO intentions? And how about their motivation to run in this race? Could this be a catalytic factor that drives the VCO behaviors of the runners? Could the analysis for his event be a case study for other running events using nature settings? Finally, with all this data in mind, it was time for him to think of a plan of how to move forward to contribute to positive climate change via his event participants.

Learning Outcomes

This case study provides students the opportunity to (a) analyze mountain runners' environmental orientation to justify the implementation of pro-environmental practices in nature-based sport events, (b) investigate mountain runners' VCO behavioral intentions, and (c) develop effective VCO marketing plans.

Review/Discussion Questions

(a) Why do sport event participants participate in running events in natural environments?

(b) Based on the case study data, what variables may be critical to enhancing participants' connection with the natural environment and donating to offset their carbon footprint?

(c) Do you think mountain runners may be a group with a high ecological identity? Justify your answer with the case study data and your own background research.

(d) How can sport event managers develop VCO marketing plans to enhance the effectiveness of pro-environmental practices among sport event participants?

Learning Activity: Create an Effective VCO Emissions Marketing Plan

For this activity, the students have to create suggestions about how to best market to the sport event participant target market to influence their intentions to donate to offset their emissions positively.

The students will have to create a VCO emission marketing plan for sport event participants across multiple promotional platforms such as media, pre–during–post event, signage, and

Table 1 Means and *SD* of the Running Motivation, Place Attachment, Nature Bonding, Ecological Identity, and VCO Intentions Measured

Item	*M*[a]	*SD*
The motivation for running	5.94	1.27
Place attachment	4.87	1.15
Nature bonding	5.41	0.99
Ecological identity	5.84	0.74
VCO intentions	5.03	1.58

Note. VCO = voluntary carbon offsetting.
[a]The measures were from 1 to 7, where 1 = *strongly disagree* and 7 = *strongly agree*.

programming. Students will first need to analyze the needs of the target market, which are sport event participants in natural environments. For the market analysis, the students need to look carefully at the demographics of such target market and their potential consumption behaviors. The case study data can help, but more studies about active sport event participants in the literature inform the students. Next, the students have to consider the constructs introduced in this study: place attachment, ecological identity, and nature bonding. Then the students have to consider how these constructs can influence the sport event participants to donate more toward VCO emissions. Finally, within that approach, the students have to think about how they can increase place attachment and nature bonding, and provide a specific set of actions.

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