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# Exploring the relationship between trout fishing and wellbeing: insights from Aotearoa New Zealand trout anglers

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## ABSTRACT

Internationally, there is growing interest in understanding the potential for recreational fishing to enhance the wellbeing of participants. To date, no studies have investigated the potential for recreational trout fishing to influence wellbeing in the Aotearoa New Zealand context. To address this gap, nine semi-structured interviews were conducted with anglers in the local community and explored their understanding of wellbeing and how they perceive trout fishing contributes to their wellbeing. The interviews were audio-recorded, transcribed, analysed thematically, and examined using the Te Whare Tapa Whā model of holistic wellbeing. For trout anglers, wellbeing incorporated mental, physical, spiritual, and relational health. Trout fishing was perceived as enhancing these elements of wellbeing by fostering positive states of being; cultivating connection with self, others, place and nature; allowing for disconnection from stressors; and providing physical exercise. These exploratory findings highlight the potential for trout fishing to enhance all dimensions of holistic wellbeing within the Te Whare Tapa Whā model and a need for further research in this area.

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## Introduction

Over recent decades, a troubling trend of declining mental wellbeing has emerged in Aotearoa New Zealand (New Zealand Health Survey Database 2011; Fleming et al. 2022; Stats 2022). While ongoing research seeks to understand the causes of this decline, evidence suggests that the COVID-19 pandemic exacerbated the situation (Every-Palmer et al. 2020; Gasteiger et al. 2021). This deterioration of mental wellbeing has compounded financial pressures on an already burdened healthcare system (Ministry of Health 2017) underscoring the need for innovative and cost-effective solutions to improve, maintain and enhance the wellbeing of New Zealanders.

Internationally, there is a growing recognition of the positive effects that nature exposure can have on individuals' health and wellbeing (Shanahan et al. 2019; Lewis

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et al. 2022). Research has shown that exposure to green spaces, such as parks, gardens, and forests, as well as blue spaces, including rivers, lakes, and oceans, can improve various aspects of an individual's wellbeing (White et al. 2020; Yang et al. 2021). As a result, nature-based wellbeing interventions involving nature walks (Kotera et al. 2021), forest bathing (Farrow and Washburn 2019), gardening (Howarth et al. 2020), and water-based sports, including some types of recreational fishing (Britton et al. 2020), have been developed and assessed for their ability to enhance various elements of individual wellbeing.

To date, the existing research has been able to identify several ways in which nature exposure can enhance aspects of wellbeing. For example, some studies have assessed the physiological responses of the human body when exposed to nature and have been able to demonstrate reduced cortisol, heart rate, and systolic and diastolic blood pressure (Antonelli et al. 2019; Yao et al. 2021). At a psychological level, other studies have demonstrated how nature exposure can reduce perceived stress and anxiety (Yao et al. 2021), while green exercise, or exercise in nature, can improve mood and self-esteem (Barton and Pretty 2010). Furthermore, participation in some nature-based recreational activities has been shown to facilitate participants entering a state of 'flow' (Jones et al. 2000; Wöran and Arnberger 2012; Cheng and Lu 2015) which can produce a deep sense of enjoyment and happiness (Csikszentmihalyi 1990) and therefore enhanced subjective wellbeing.

One nature-based recreational activity that has received limited attention in the wellbeing and nature exposure context is freshwater trout fishing. Trout fishing offers participants a unique opportunity to immerse themselves in nature, in both green and blue spaces simultaneously, making it a potentially ideal activity for the enhancement of participant wellbeing and therefore the development of a nature-based wellbeing intervention. Despite some international research exploring the potential for fly fishing-based courses to influence elements of participant wellbeing (Mowatt and Bennett 2011; Reese et al. 2022), there is a lack of research exploring the link between recreational fishing and wellbeing in the specific context of Aotearoa New Zealand, despite the country's abundance of coastlines, rivers, streams, and lakes.

Trout fishing is a popular activity in New Zealand and globally, owing to the wide distribution and prevalence of trout (McDowall 1990; Muhlfeld et al. 2019) and its recreational utility as a sports fish and food source. Each year, approximately 300,000 fishing licences are sold during New Zealand's sports fishing season (2022/2023) and anglers collectively spend nearly 1.3 million days fishing in the country's rivers, streams, and lakes (Unwin 2016). Trout fishing locations in New Zealand are predominantly situated in rural areas adorned with pastoral landscapes or backcountry areas characterised by native forests/vegetation, offering anglers exposure to green spaces. Additionally, the very nature of trout fishing, encompassing bait fishing, lure/spin fishing, and fly fishing, often involves direct contact with water, providing anglers with immersive blue space exposure. The combination of the green space and immersive blue space associated with trout fishing provides a multisensory experience (Franco et al. 2017) which could offer additive or cumulative wellbeing benefits for participants (Kjellgren and Buhrkall 2010; Aristizabal et al. 2021).

While research on the impact of recreational fishing on health and wellbeing has received limited attention in New Zealand, there has been increasing interest internationally. The existing studies have primarily focused on the impact of recreational fishing on

individuals with specific health conditions or the effect of fishing participation on wellbeing in distinct international contexts. For instance, Mowatt and Bennett (2011) investigated the effects of a month-long fly fishing course on post-traumatic stress disorder symptoms among military veterans in the United States. The intervention resulted in reductions in perceived stress, negative mood states, depression, anxiety, and sleep issues. Hunt and McManus (2016) surveyed Australian saltwater anglers and found that when compared to the general population, these anglers exhibited lower rates of excess body weight and obesity and reported more active lifestyles. More recently, Pita et al. (2022) evaluated stress levels among Spanish saltwater anglers, revealing an inverse relationship between angling frequency and stress. Similarly, a separate study involving anglers from the United Kingdom found a positive correlation between mental wellbeing and angling frequency, with a corresponding decrease in symptoms of depression and anxiety as fishing participation increased (Wilson et al. 2023). Notably, these studies have not specifically examined trout fishing or recreational angling within the New Zealand context, which presents unique characteristics and diversities in fish species, angling practices, angling culture, environments, societal factors, and health/wellbeing challenges.

Given the research gap regarding the relationship between trout fishing and wellbeing, in this qualitative exploratory study we aimed to (1) investigate trout anglers' understanding and interpretation of wellbeing, and (2) to examine how trout anglers perceive the influence of trout fishing on their wellbeing. The research aims were pursued using a qualitative research design involving semi-structured interviews and reflexive thematic analysis. This design was grounded in a paradigmatic approach of interpretivism and constructivism, acknowledging the subjective nature of wellbeing and aiming to accurately reflect participants' experiences while acknowledging the researchers' interpretive role. Furthermore, given the multifaceted nature of wellbeing, and the need for a holistic framework to examine participants' views, particularly in the New Zealand context, we utilised the Te Whare Tapa Whā model of holistic (hauora) health as a guiding framework. The Te Whare Tapa Whā model, developed by Sir Mason Durie (Durie 1985), was initially developed as a Māori health model but is now widely used in New Zealand as a model of holistic wellbeing for both Māori and non-Māori (Patterson et al. 2018; MacKenzie et al. 2022; Ministry of Education 2022).

While previous studies have focused on recreational saltwater angling or fly fishing courses for individuals with specific health disorders, our study encompasses perspectives of trout anglers from within the general population. By addressing this research gap, this exploratory study contributes to understanding the potential impact of recreational trout fishing on angler wellbeing in a New Zealand context and will further contribute to the growing body of literature investigating the potential for nature exposure to enhance individual wellbeing.

## **Methods**

### ***Preparation***

Before the study commenced, C.S. guided I.B-F during a day of trout fishing near Dunedin, Otago, New Zealand. C.S. familiarised I.B-F with the diverse aspects of trout

fishing to enable her to conduct angler interviews with sufficient knowledge, given her lack of prior trout fishing experience.

The day included fishing trips to three different locations: the middle reaches of the Taieri River near Hindon, a semi-remote and scenic angling environment; the lower reaches of the Taieri River near Allanton, a rural lowland angling experience; and the Southern Reservoir, an urban trout fishery located within Dunedin City. During the fishing excursions, I.B-F was introduced to bait, spin, and fly fishing techniques.

### ***Ethical approval***

Ethical approval for this study was granted by the University of Otago Human Ethics Committee on 8 December 2022 (D22/332). Consultation with the Ngāi Tahu Māori Research Committee was also undertaken as part of the standard processes required for research at the University of Otago.

### ***Setting and participants***

Nine New Zealand resident trout anglers were recruited using snowball sampling from the personal and professional contacts of one of the authors (C.S.). Geographically, the participants resided in the Otago and Southland regions, located in the lower South Island of New Zealand, specifically in the towns/cities of Dunedin, Invercargill, and Queenstown.

### ***Interview schedule***

We developed a semi-structured interview schedule to explore trout anglers' understanding of wellbeing and how they perceived the effect of trout fishing on their wellbeing. Due to limited existing literature on this specific topic in the New Zealand context and to ensure that the questions would provide information to address the study's objectives, the interview questions were developed collaboratively based on the authors' expertise (wellbeing (S.N-R), angler/fishing (C.S), indigenous Māori perspective (I.B-F)). The semi-structured nature of the interview format allowed for flexibility to explore the various dimensions of wellbeing previously identified and leverage the researchers' expertise, while also still allowing the participants freedom to guide the conversation in directions that may not have been anticipated (Smith and Sparkes 2016). Topics covered in the interviews included personal concepts of wellbeing, motivations for trout fishing, and recent fulfilling and challenging fishing experiences. Participants were invited to reflect on their individual concepts of wellbeing before discussing how they perceived trout fishing influenced their wellbeing. Throughout, prompts were used to facilitate discussion and clarify participant responses.

Following the first two interviews, the interview transcripts were reviewed to ensure the participant responses addressed the aims of our study. Only minor refinements were made to the interview schedule based on the insights gained from the initial interviews.

## **Procedures**

Prior to conducting each interview, demographic and background information were collected for all nine participants. The interviews took place between December 15, 2022 and February 8, 2023, which coincided with the peak of the summer trout fishing season in New Zealand. Due to the prevalence of local COVID-19 cases during the study period, all nine interviews were conducted remotely via Zoom®. The interviews ranged in duration from 25 to 60 min.

With participants' permission, each interview was audio recorded and transcribed verbatim. In addition, general notes were taken by the interviewer during the interview to provide context. To promote transparency, copies of the transcriptions were shared with the interviewees for accuracy checking prior to the commencement of data analysis.

## **Data analysis**

We employed reflexive thematic analysis, guided by the multi-phase process outlined in Braun and Clarke (2006; 2014; 2019). As discussed, there is a scarcity of studies investigating the relationship between trout fishing and wellbeing. Thematic analysis is particularly valuable in exploring areas of research that have received limited attention (Braun and Clarke 2006). Reflexive thematic analysis also fit well with our paradigmatic approach of interpretivism and constructivism as it allows space for capturing the nuanced perspectives of participants while acknowledging the role of the researchers in meaning making.

In the first phase, we familiarised ourselves with the data by thoroughly reading and re-reading the de-identified transcripts, making note of initial impressions and potentially significant quotations. In the second phase, I.B-F, S.N-R, and C.S individually developed initial codes, assigning interpretive labels to parts of the data that could be relevant to our research aims. Our approach to coding was predominantly inductive, prioritising open coding of data and emphasising meanings derived directly from participants and the data. Deductive analysis was incorporated to ensure that the process generated themes relevant to the research questions.

We revised our coding iterations multiple times, individually and as a group and revisited all transcripts to ensure consistency. Once all relevant data items had been coded, in phase three I.B-F and C.S, with input from S.N-R and K.S, examined and merged codes according to common meanings to develop themes and sub-themes. We then reviewed the themes in relation to each other and the data set as a whole to further refine them.

Following these phases, we defined and named our themes and selected participant quotations that conveyed accounts of the themes. Quotations were edited to remove disfluencies and superfluous words and to preserve the anonymity of the individuals while maintaining the integrity of their contributions.

Throughout the analysis, we took a collaborative approach and engaged in discussions regarding our codes and themes with ongoing critical reflection of our own assumptions, biases, and interpretations to facilitate richer interpretations of meaning. I.B-F's status as a novice angler played an important role in facilitating dialogue and rapport with participants. Having had some limited trout fishing experience, she was able to converse

meaningfully while her novice status meant participants often took the initiative to explain techniques and concepts in detail, enriching the discussions. C.S' extensive angling experience facilitated the interpretation of more technical aspects within participants' responses as well as drawing on his own angling experiences to elucidate nuances. S.N-R was able to identify and categorise participants' descriptions within the framework of wellbeing literature. We note too that progressing through the phases was not a linear journey; rather, it involved iterative movement back and forth between phases (Braun and Clarke 2019).

Following the development of the themes, they were examined within the framework of Te Whare Tapa Whā (Durie 1985). This model presents a holistic (hauora) conception of wellbeing. It is symbolised as a wharenuī (house) with four walls representing interconnected components: taha hinengaro (mental), taha whānau (social), taha wairua (spiritual), and taha tinana (physical). These walls are supported by the whenua (land), which forms the foundation of these wellbeing elements. When applying the Te Whare Tapa Whā model, we deferred to I.B-F for her expertise as tangata whenua to ensure an appropriate interpretation and application of the framework within the context of the study.

## Results

### *Participant demographics*

Seven participants identified as men and two as women. The employment status of the participants varied, with seven participants engaged in full-time employment, and one each in part-time employment or as a tertiary student. While one participant was in the process of recovering from injury, the remaining participants reported no physical disabilities. Six participants resided in Dunedin, two in Invercargill, and one in Queenstown. Three participants primarily engaged in fly fishing, whereas the remaining anglers were predominantly or exclusively spin anglers. The frequency of angling activity varied, spanning from eight times per season to 75 times per season with typical trout fishing trips ranging from one hour to eight hours. [Table 1](#) outlines a breakdown of angler profiles and pseudonyms assigned to the participants.

### *Themes*

#### *Trout anglers' understanding and interpretation of wellbeing*

Participants' responses defining wellbeing were grouped into five key themes: presence of positive states of being and absence of negative states of being, physical health, mental health, spiritual health, and relational health.

#### *Presence of positive states of being and absence of negative states of being*

All participants associated wellbeing with the presence of positive states of being. The positive aspects included happiness, contentment, and being in a relaxed or peaceful state. Hazel expressed this as, 'Wellbeing is everything's going right. You're just happy in yourself. Happy in your space ... I think that all boils down to everything's going

**Table 1.** Pseudonyms and characteristics of interview participants.

Name	Gender	Age group	Duration of typical trout fishing trip	Typical angling environments	Participation rate*	Primary angling method
Emma	Female	25–30	2–3h	Rural rivers, lakes	15 days per season	Spin Shore-based
Ralph	Male	45–50	3–4h	Rural rivers	23 days per season	Spin Shore and non – motorised boat
Tasman	Male	20–25	2h	Rural rivers	8 days per season	Spin Shore-based
Pat	Male	40–45	6–8h	Remote rivers	23 days per season	Fly Shore-based
Ross	Male	50–55	3–4h	Rural rivers	25 days per season	Spin Shore and non-motorised boat
David	Male	50–55	2h	Rural rivers	30 days per season	Fly Shore-based
Hazel	Female	55–60	1–3h	Rural rivers, lakes	40 days per season	Spin Motorised boat
James	Male	50–55	NA	Rural rivers	15 days per season	Spin Shore-based
Terry	Male	65–70	8h	Rural rivers, remote rivers, lakes	75 days per season	Fly Shore-based

\*Fishing season length 1 October–30 April.

okay’. Ross emphasised inner peace, saying, ‘it’s that inner peace, isn’t it? ... A general calmness, about life in general’.

Many participants also identified the absence of negative states of being as a component of wellbeing, often using the term ‘free of’ and going on to refer to worries or concerns, stress, anxiety, and physical ailments.

### **Physical health**

Several anglers commented that physical health was an important part of wellbeing as being physically well enabled them to engage in activities they enjoyed and needed to do, as encapsulated by David: ‘Physically, it is being able to do the things that you love and enjoy and to fulfil your responsibilities as well’. Ross echoed this sentiment – ‘feeling physically able and fit to be able to go and do things’.

### **Mental health**

The participants consistently emphasised the vital role of mental health in overall wellbeing. Many participants recognised that maintaining their mental health was very important and that mental health was an important component of wellbeing. Terry shared a personal experience where he witnessed the impacts of poor mental health on wellbeing, stating, ‘[mental health is] ... very important. I had a best friend ... who had very poor mental health ... so I know the harsh realities of poor mental health and wellbeing’. David also underscored the critical connection between mental health and wellbeing elucidating the interplay between mental health and physical health. He also highlighted how mental health is tied not only to enjoyment of life but also plays a pivotal role in resiliency when confronting life’s challenges:



I say mental health is crucial to people's overall wellbeing. If you don't look after your head-space, that can have flow on effects into your physical life as well. And also your ability to enjoy life and to actively participate in it. And sometimes not necessarily to enjoy life but to engage in it and to take on those challenges and responsibilities that that we all have (David).

### ***Spiritual health***

Several participants recognised a spiritual dimension to wellbeing, even though for most, it did not have a religious affiliation. David expressed this spiritual aspect as, 'knowing that you're part of something bigger than you and that you can contribute to it'. Ross elaborated further, explaining, '... my spirituality comes directly from nature and the natural order of things ... the life cycles of all these things and the way that they provide and provide us with sustenance for a short period of time while we're here'. This perspective highlights the significance of a spiritual connection to nature and the broader world in the angler participants' concept of wellbeing.

### ***Relational health***

Some participants emphasised that their own wellbeing was intertwined with the wellbeing of others. Pat conveyed this interconnectedness by stating, '... we've got four young kids and wellbeing would be knowing they're well cared for and happy and I guess, content'. Similarly for Hazel, her own wellbeing was linked to that of her family, but it also extended to encompass her environment and work: 'My wellbeing is not just me – it's my surroundings; it's my work; it's my family. All those things. My wellbeing is not good when someone else is not happy'. These insights underscored the participants' recognition of the interdependence between their own wellbeing and the wellbeing of those around them.

### ***The perceived effect of trout fishing on angler wellbeing***

Themes demonstrating how trout fishing influences wellbeing included: connection, disconnection and focus, positive states of being and trout fishing as exercise. Within the theme of connection, further nuances were identified encompassing connection with self, others, nature, and place.

#### ***Connection***

***Connection with self.*** Several participants discussed how trout fishing afforded them valuable moments of solitude and personal reflection, away from other life distractions. They expressed that a fulfilling trout fishing experience often entailed fishing alone and described a preference for solitary trout fishing trips. For example, Tasman said:

trout fishing gives you the opportunity to set time aside for yourself. Even though it might be disguised as trout fishing, that's actually a good escape for yourself, even though it might be an hour, that's an hour for you.

David echoed this sentiment, framing this time as an opportunity to 'reset' themselves, emphasising the restorative effect it had on their sense of self. Moreover, this practice had positive ripple effects on his family dynamics and relationships. David explained,

... for me, it's [trout fishing] kind of like my weekly reset ... we've come to more of an understanding at home, in our family and relationships, that you do need a place, somewhere to reset. Somewhere just to take a pause, take a breather, and that's what it [trout fishing] gives me ... hopefully, [after trout fishing] I come back in a better place, and a better frame of mind, and can be a better father, a better husband, or a better friend.

**Connection with others.** Many participants explained that trout fishing enhanced their wellbeing as it provided a mechanism for meaningful connection with fishing companions, including friends and family members. A comment made by Terry encapsulated this sentiment: 'I take a lot of people fishing. And in that way, it's a wonderful connection'. While some participants particularly valued the shared experience as a means to enhance their sense of wellbeing, even among those who expressed a preference for solo fishing excursions, there was acknowledgement that trout fishing could facilitate connection with others, which could contribute to an improved state of wellbeing.

The perspective of Terry underscored this theme of connection with others, particularly as it related to introducing new people to the sport of trout fishing:

... one of the greatest pleasures I get is introducing young men and women to a sport that I love, which is fly fishing ... spotting fish, showing them where fish lie ... I've got a lot of friends and I've taught their sons and daughters to fish and taken them out and then most of them have embraced it ... . It really lifts my soul and gives me a lot of pleasure.

This profound sense of fulfilment derived from shared angling experiences underscores the significant impact it has on their overall wellbeing.

**Connection with nature.** The potential for trout fishing to facilitate a connection with nature was a prominent theme in all interviews, both when participants were discussing how trout fishing contributed to their wellbeing, and when they were describing the characteristics of a recent fulfilling trout fishing trip. 'Nature' comprised the environment itself, the wildlife (trout and other animals), and the water. Ross aptly articulated this connection, emphasising the impact of nature on wellbeing: 'being in nature ... has an impact on your wellbeing. Green spaces, expanses of water flowing, water noise, birds, just nature in itself and being in that ... I think it's quite therapeutic and it does add a lot to your wellbeing'. Pat highlighted the 'immersive' nature of trout fishing, both physically and mentally. He described the experience as spending hours focused on the water, keenly observing for any signs of movement – 'this little shape or a little flicker or a ripple on the surface' – indicating the presence of a trout.

James delved into the evolutionary aspect of the connection between nature and wellbeing, acknowledging our ancestral roots as hunter-gatherers and suggesting that, although our lifestyles have evolved, there remains a spiritual resonance with these foundational experiences:

I think a lot of the motivations and a lot of the benefits we get from fishing are quite evolutionarily based, so quite historic, our connection to the natural world. You know, we evolved as hunter gatherers. And I know that a large sector of society thinks ... we don't need to have a hunter gatherer lifestyle ... that doesn't mean that we don't have some sort of spiritual level of recognition that we still gain satisfaction from some of the fundamentals of those historic sort of things that would have caused success in terms of subsistence.

Thus, for James, the connection to nature was closely tied to spirituality, contributing to his overall sense of wellbeing.

During the interviews, participants were specifically asked about the degree of water exposure they had when trout fishing and the effect or potential effect of that water exposure on their wellbeing. Provided that conditions allowed for it (i.e. water was not too cold or polluted), all participants described a preference for ‘wet wading’ which entails wading through the water in just boots and shorts and therefore results in direct skin-to-water contact. As David described, ‘It’s that tactile feeling of being with water, and the temperature. It’s almost cleansing and it’s refreshing. It’s invigorating’. Most participants stated that they felt that water contact while trout fishing was enjoyable and beneficial to their wellbeing.

In addition to the sensory experience, some participants attributed a deeper significance to their water immersion experiences. Two participants explicitly linked their connection with water to a sense of reverence for the power of the river. Ross emphasised, ‘... if you’re in clear water streams, there is a power about the river that I always respect’. Similarly, Ralph reflected on the varying strengths of rivers, noting,

... you can feel the power of the river depending on which river you’re in. Depends on the river and where you are but there’s certainly a sort of a spiritual aspect to being near a river, and seeing a river, that’s for sure.

### ***Connection with place***

For many participants, trout fishing fostered a deeper connection with specific places. These places often carried personal and familial significance, representing a link to their upbringing and heritage. For example, Hazel described a particular river as a ‘very special place’ due to strong familial ties and cherished childhood memories spent trout fishing. This sentiment was echoed by Tasman, who described his fondness for a particular gorge, a spot from his childhood, and the pleasure of sharing it with his partner which offered a glimpse into his roots. Pat however, touched on a sombre aspect of this connection to place. Reflecting on his upbringing in a rural area, he described that while he once enjoyed going fishing in the local streams, over the years, the degradation of these streams meant he no longer fished them, leading to a loss of this connection. This illustrated how changing environmental conditions can impact on participants’ relationship with these places, potentially influencing their overall wellbeing.

### ***Disconnection and focus***

Although it was clear that participants felt trout fishing fostered ‘connection’ to a wide range of positive elements associated with trout fishing, it also provided a valuable means of disconnecting from the urban environment and the myriad distractions of modern life which in turn positively impacted their wellbeing. As Ross aptly put it:

It’s about disconnecting from other things, the urban environment. You know, coming away from screens, laptops, the stuff that’s around us every day, lots of other distractions, that sort of noise and clutter that you get in your life.

Pat described this disconnection as ‘getting a break’ from life’s stressors, going on to say:

The benefit [of trout fishing] is you’re not thinking “oh, I’ve got rent to pay, we’ve got you know, work stuff going on, or emails to attend to” or the logistics of life that just seem to build and build and build ... when you’re away trout fishing, all that just seems to drift ... you just don’t think about it ... I guess the trout fishing experience can be so immersive that there’s no space to think about those things or those things are just pushed out.

Closely tied to the idea of being able to disconnect and evidenced in this quote was focus. Engaging in trout fishing allowed participants to concentrate solely on the act of fishing itself. In this state, life stressors faded into the background. Interestingly, the relationship between disconnection and focus was not uniform among participants. For some, disconnection preceded a heightened focus, while for others, intense focus facilitated a sense of disconnection from stressors. David encapsulated the former dynamic, noting how trout fishing enabled him to

shut out the other distractions ... the everyday matters of life which are always buzzing around in our heads ... and you often sort of push them out, just for a moment, and just focus on what’s in front of you.

In contrast, illustrating the latter dynamic, James described how the act of fishing encouraged a simplified, superficial level of thinking, which in turn facilitated a mental ‘reset’.

These insights underscored how trout fishing offered a dual function, enabling a deepened sense of focus, a present-moment awareness, while also providing a disconnect and so a reprieve from the demands and stimuli of modern life.

### ***Positive states of being***

Throughout all interviews, participants consistently reported experiencing a range of positive states of being while trout fishing. Engaging in trout fishing, coupled with exposure to other factors such as the natural environment and quality time with family, elicited feelings of happiness, satisfaction, relaxation, excitement, exhilaration, and pleasure. For example, Emma recounted her association with trout fishing as a composite of enjoyable experiences: ‘I guess trout fishing is immediately associated with good times in my mind. ... Somewhere remote, usually with your family and the dog. ... it’s just all of the good things, all in one experience’. Ralph also elaborated on the positive emotions that trout fishing created for him and emphasised that these had direct bearing on his wellbeing ‘[trout fishing makes] me happy and satisfied ... it’s an enjoyable component of my life. So, by doing it, I elevate those different mental health or wellbeing components’.

### ***Trout fishing as exercise***

Several participants reported that trout fishing could contribute to physical wellbeing as it was a form of exercise. Tasman mentioned that ‘[when trout fishing] ... you might have to walk for an hour ... you get a bit of an exercise buzz on from that’. Similarly, Pat expressed, ‘... the way I do it, is you just walk, you have a good physical blowout. You feel good walking in fresh air’. The exercise described by the participants took the form of walking or using a rowboat or kayak, and the process of handling and launching

these small vessels while also engaging in paddling during fishing. Furthermore, when participants were asked to describe a recent memorable trout fishing trip or a challenging fishing trip, physical activity, and in some cases, physical exertion, was noted.

## Discussion

The aim of this exploratory research was to investigate trout anglers' understanding and interpretation of wellbeing and to examine how they perceive the influence of trout fishing on their wellbeing. Through the nine in-depth interviews, participants shared their individual perspectives on the concept of wellbeing, emphasising its nuanced components including: positive states of being, the absence of negative states of being, physical health, mental health, spiritual health, and relational health. The anglers' collective conceptualisations of wellbeing mirrored the Te Whare Tapa Whā model of holistic health, which suggests the anglers we interviewed had a comprehensive understanding that enabled them to effectively articulate the impact of trout fishing on their wellbeing.

There was consensus among all participants that trout fishing was an enjoyable activity with benefits that transcended the enjoyment from the act itself to positively impact multiple aspects of their wellbeing. When the interviews were considered collectively, it was evident through the themes that trout fishing could contribute to all aspects of holistic wellbeing outlined within the Te Whare Tapa Whā model. For example, the interviews provided evidence for the potential of trout fishing to enhance participants' mental wellbeing (*taha hinengaro*). Participants perceived trout fishing as a very enjoyable activity that had a positive influence on their emotions and state of being. The enjoyment and resulting happiness experienced during trout fishing suggests that trout fishing can contribute to an individual's subjective wellbeing, which is a fundamental aspect of overall health (Diener and Chan 2011; Diener et al. 2017). Furthermore, many participants emphasised how trout fishing enabled them to fully concentrate on the task at hand – catching a trout – and temporarily detach from the stressors of modern life. This heightened focus, combined with the intrinsic enjoyment and challenge of trout fishing, may facilitate the attainment of a state of flow (Csikszentmihalyi 1990), as has been observed in comparable nature- and water-based recreational activities (Jones et al. 2000; Wöran and Arnberger 2012; Cheng and Lu 2015). The disconnection from stressors, particularly technological devices, facilitated by trout fishing, could potentially contribute to the mental wellbeing of participants. Excessive screen time, a prevalent issue in New Zealand (Norton 2022), has been linked to elevated levels of anxiety and depression (Maras et al. 2015; Wang et al. 2019).

All interviews revealed that trout fishing established a profound connection with various elements of nature which is related to *taha hinengaro* (mental wellbeing), *taha wairua* (spiritual wellbeing) and *whenua* (connection with the land/environment). Participants universally derived enjoyment from their interactions with nature during trout fishing, with some explicitly noting that the contact they had with various elements of 'nature' (scenery, rivers, lakes, streams, wildlife, and water) enhanced their wellbeing. This finding is consistent with similar activities that have demonstrated improved health and wellbeing outcomes following exposure to nature. For example, spending time in forested environments (known as *shinrin-yoku*/forest bathing) and green spaces has been associated with improvements in several physiological and psychological health

indices (Antonelli et al. 2019; Wen et al. 2019; Yao et al. 2021; Jabbar et al. 2022). Furthermore, research has demonstrated that engaging in immersive blue space leisure activities, which involve contact with water, can lead to positive psycho-social wellbeing outcomes (Britton et al. 2020). Considering that trout fishing in New Zealand offers participants exposure to both forest/green space and blue space simultaneously, it is highly plausible that blue and green space exposure via trout fishing could have a positive effect on various elements of participant wellbeing.

It is well established that increased levels of physical activity can improve both physical (Warburton et al. 2006) and mental health outcomes (Fox 1999). Several participants in our study noted that trout fishing provided them with a form of exercise and believed that trout fishing contributed to their physical wellbeing (*taha tinana*). When participants described typical trout fishing trips, it was evident that they engaged in varying amounts of walking, ranging from short distances to full-day excursions covering several kilometres. Walking is widely recognised as a beneficial form of exercise and has been associated with reductions in chronic diseases and depressive symptoms (Lee and Buchner 2008; Robertson et al. 2012). Furthermore, given the characteristics of trout fishing – an activity that involves walking, along with frequent casting of fishing rods requiring regular stopping and starting – it can be considered a low-impact exercise. The low-impact nature is particularly valuable for older adults (65+), which represents approximately 17% of trout anglers in New Zealand (New Zealand Fish & Game Council, unpublished data). Research has demonstrated the advantages of low-impact exercise for this demographic, enhancing both physical and mental health (Diehr and Hirsch 2010; Varma et al. 2014). Consequently, trout fishing may hold particular utility as a nature-based activity that enhances the physical wellbeing of older adults.

Connection with people (*taha whānau*) is a key element of wellbeing and in our study, all participants emphasised that trout fishing was particularly enjoyable as it provided them with a way to connect with their family and friends. This finding is in line with international (Young et al. 2016) and New Zealand-based research (Hayes et al. 2023) which has identified spending time with friends and family as a significant motivator for participating in angling. Additionally, the social dimension of recreational fishing has been acknowledged in some recreational fishing-based health interventions (Mowatt and Bennett 2011; Reese et al. 2022). As such, it is plausible that trout fishing as a nature-based recreational activity in the New Zealand context, could enhance participant wellbeing by fostering meaningful connections with others.

Although it was evident that the social element of trout fishing could contribute to *taha whānau*, our study also revealed the potential for the solitary aspect of trout fishing to enhance wellbeing. Several participants explained that trout fishing provided them with valuable alone time to unwind (*taha hinengaro*), and some even described a preference for solitary fishing trips. Recent research on trout fishing participation in New Zealand has revealed that for many anglers, trout fishing is primarily a solitary pursuit (Hayes et al. 2023). Future research should aim to further explore the potential for self-connection through the solitary aspect of trout fishing. It may be that for some individuals, time alone while trout fishing constitutes a critical element of the overall trout fishing experience, and that this solitude carries distinct wellbeing benefits.

Overall, the findings of our study align with similar qualitative enquiries examining the effect of nature exposure on the wellbeing of outdoor recreationalists. For instance,

Puhakka (2021) explored the influence of nature exposure on the wellbeing of Finnish university students who engaged in outdoor recreation. The students reported that nature experiences improved their psychological wellbeing by eliciting positive emotions and diminishing negative emotions, could enhance physical wellbeing by providing opportunities for physical activity and could provide opportunity to strengthen social relationships by fostering social interaction – paralleling the factors observed in our study among trout anglers. Likewise, Brymer et al. (2021) explored how Australian outdoor enthusiasts believed nature enhanced their mental wellbeing. A prominent theme in their research was that nature-based experiences facilitated being present in the moment, echoing a key theme identified in our work where participants highlighted the potential for trout fishing to enhance focus and disconnection from stressors. The alignment of our findings with comparable research further suggests that trout fishing possess value as a nature-based activity that may enhance participant wellbeing.

### **Strengths and limitations**

While our study makes a valuable contribution to the growing interest in the potential for recreational fishing to enhance participant wellbeing, we acknowledge its limitations which may restrict the applicability of our results to the broader New Zealand population. Firstly, our study relied on a small sample size which may not fully capture the diversity of experiences and perspectives related to trout fishing and wellbeing in New Zealand. Secondly, our participants were exclusively from the lower South Island, potentially limiting the representation of angler experiences from other regions with different fishing environments and cultures. Finally, our study lacked gender and ethnic diversity. The gender distribution in our study comprised seven men and two women, all of European descent. While this gender breakdown mirrors the current demographics of trout fishing participants in New Zealand, it hinders the exploration of potential variations in fishing experiences among other gender groups and ethnicities.

Notwithstanding these limitations, our research serves as a valuable starting point for future research into the potential for recreational trout fishing to enhance participant wellbeing within the New Zealand context and beyond. Future studies incorporating larger and more diverse samples from various geographical regions and ethnic backgrounds, could offer further insights into any potential causal relationship between trout fishing and wellbeing.

### **Conclusion**

In summary, the results from this exploratory study have shown that recreational trout fishing may enhance the mental, physical, spiritual, and relational wellbeing of participants. Through the interviews, it was evident that trout fishing could contribute to all elements of wellbeing within the Te Whare Tapa Whā model of holistic wellbeing by promoting feelings of happiness, facilitating connection with self, others, nature and place, and allowing disconnection from stressors. Furthermore, trout fishing provided a form of exercise and opportunity to think simply and focus. This work complements existing studies that have assessed the ability fly fishing-based courses to improve the health/wellbeing of individuals with specific health disorders (Mowatt and Bennett 2011; Reese et al.

2022). Our study adds to this existing work by suggesting engagement in both fly and spin fishing for trout in the New Zealand context may confer wellbeing benefits for trout anglers from the general population and thus trout fishing may play an important part in enhancing and maintaining the wellbeing of current anglers in New Zealand. To further build on and validate the findings of this work, it would be useful if future research quantitatively assesses the potential for trout fishing to enhance the wellbeing of trout anglers. For example, surveying large groups of trout anglers to assess the relationship between time spent fishing (frequency of participation and duration) and wellbeing, using validated wellbeing metrics and, identifying the angling environments and methods which confer the greatest wellbeing benefits. Such information could be used to help inform the development of a trout fishing-based wellbeing intervention in the future.

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