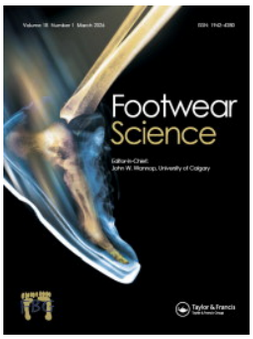

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RESEARCH ARTICLE

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An evidence-based educational video does not influence running shoe selection: a randomised controlled trial

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ABSTRACT

Runners may select shoes based on marketing recommendations rather than scientific evidence. It remains unknown if education on the latest research can influence subjective appreciation of footwear and selection. Our aims were to identify how an evidence-based educational video influences how runners select shoes, and perceive shoe comfort, satisfaction, and performance over three months compared with a control video. Fifty-six uninjured runners looking for a new pair of running shoes completed this randomised controlled trial. Prior to purchasing new shoes for road running in speciality stores, runners were assigned to watch an educational video on (1) the latest research about the association between running shoes and injuries (intervention) or (2) the evolution of running demographics (control). Runners completed surveys about their newly purchased shoes in reference to their previous shoes at three time points: before first use, one-month post-purchase, and three-months post-purchase. Perceived shoe comfort, satisfaction, and performance were assessed using 100 mm visual analogue scales. Comfort and satisfaction were not significantly different between groups at any time points. The average perceived performance of new shoes (75.6 mm) was significantly greater than previous shoes (67.6 mm) before first use, but ratings returned to previous-shoe levels one month later in both groups. The intervention group reported the educational video influencing their purchase (55.4 mm) more so than the control group (21.8 mm). However, participants from both groups chose the same brand and model as previously worn over half of the time. The evidence-based educational video did not appear to influence overall perceived shoe comfort, satisfaction, or performance or shoe selection habits. Runners in both groups often chose similar shoes to the ones they previously used.

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Running; footwear selection; evidence-based education; shoe comfort; runner behavior

Introduction

Runners select their shoes based on subjective and objective factors (Fife et al., 2023), including considerations linked to comfort, performance, and injury reduction (Dhillon et al., 2020). Despite the idea that running shoe prescription can prevent injury has been challenged for over a decade (Malisoux & Theisen, 2020; Richards et al., 2009), most runners and salespeople still believe that shoes significantly influence injury rates (Nguyen et al., 2023; Wolthon et al., 2020).

Comfort is often the primary factor that runners consider when selecting footwear (Dhillon et al., 2020; Fife et al., 2025), and has been promoted as an important factor to reduce running-related injuries (Nigg et al., 2015). However, footwear comfort is subjective to the individual (Kong & Bagdon, 2010) and can be influenced by physical shoe characteristics (Menz & Bonanno, 2021) and product description (Chan et al., 2020; Fife et al., 2025; Hébert-Losier et al., 2025b). Runners primarily seek advice from specialty running stores (Nguyen et al., 2023) and may be misinformed by unsupported beliefs (Wolthon et al., 2020). Dhillon et al. (2020) created an educational module that synthesised current research regarding running shoes that specifically addressed the shoe-injury relationship. Participants reported changed perceptions of running footwear and believed the module would influence their future footwear selection, although the actual effects of the educational module on measures of subjective appreciation of footwear or selection were not assessed.

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Previous research addressing running shoe selection rely on participant recall for identifying how runners make their decisions (Dhillon et al., 2020; Ramsey et al., 2022). To our knowledge, no study has assessed running footwear purchasing behaviours in proximity to actual footwear purchase. How much runners think about their footwear purchase and their thought processes during footwear selection are currently unknown. The level of conscious thought implemented during the buying process can be used to classify individuals as conscious or unconscious buyers for a given decision, which may influence runners' satisfaction (Dijksterhuis et al., 2006). Unconscious thought theory describes how differences in thinking behaviour can influence the quality of choices and subsequent satisfaction (Dijksterhuis & Van Olden, 2006). The theory postulates that complex product decisions may benefit from unconscious thought processes, and ultimately lead to increased satisfaction over time, which may apply to running shoe selection.

Running shoe construction exists on a spectrum from minimalist to maximalist (Esculier et al., 2015). More maximal shoe designs can increase vertical loading rates (Chan et al., 2018a; Kulmala et al., 2018; Pollard et al., 2018; Rice et al., 2016) and knee joint forces (Bonacci et al., 2018; Esculier et al., 2017; Sinclair, 2014; Sinclair et al., 2016), but reduce ankle joint and Achilles tendon forces (Esculier et al., 2017; Sinclair, 2014) when compared against more minimalist footwear designs. Midsole properties (i.e. shoe cushioning density) (Theisen et al., 2014) and heel-to-toe drop characteristics appear to have minimal impact on running-related injury risk (Malisoux et al., 2016a), although too much midsole stiffness can potentially increase injury risk (Malisoux et al., 2020). Large changes in footwear properties may require a more gradual transition to allow neuromuscular adaptation and reduce injury risk (Warne & Gruber, 2017), although there are no standardised transitioning guidelines. Finally, matching foot shape to footwear type has long been shown to be ineffective in reducing running-related injury risk (Knapik et al., 2014; Ryan et al., 2011), despite its continued use to guide footwear prescription and selection (Fife et al., 2024; Nguyen et al., 2023). Such evidence-based information provided as educational content has been shown to change runner's perceptions about shoes and injuries (Dhillon et al., 2020), however, it is unclear whether it would alter their subjective appreciation of footwear or footwear selection practices.

No study has explicitly tested the effects of evidence-based education on footwear appreciation and selection. We aimed to compare the effects of an educational video against a control video on how runners select road running shoes and perceive subjective comfort, satisfaction, and performance over a three-month period. As the main factor to footwear selection is comfort, this metric was set as the primary outcome measure. Secondary outcomes included perceived satisfaction and performance; shoe brand and model selected; and minimalist shoe index. We also monitored injury incidence over this time and explored the influence of consciousness on satisfaction. We hypothesised that runners exposed to the educational video would experience greater comfort in newly purchased footwear compated to runners that viewed the control video. We also hypothesised that runners classified as unconscious buyers regarding shoe choice would report greater satisfaction than conscious ones.

Methods

Participants

Participants were recruited through online advertisements within the running community of the greater Bellingham and Seattle area (Washington state, United States). Eligibility requirements included: (1) be aged 18 years or older; (2) run a minimum of once per week for at least one month; (3) be willing to purchase new shoes from a participating store location within one month of study enrolment; and (4) use their new shoes primarily for road running. Runners were excluded if they had experienced a running-related injury in the previous six months due to training or competition based on a consensus definition (Yamato et al., 2015). The trial was approved by our institutional Human Research Ethics Committee (HREC(HECS)2021#31.1) and prospectively registered in the Australian New Zealand Clinical Trials Registry (ACTRN12622000458730). It is reported according to the CONSORT guidelines (Schulz et al., 2010).

Trial design

A parallel group randomised controlled trial was conducted. Surveys with regards to the new shoes purchased were completed at three time points: at shoe purchase before first use (N_0), one month after purchase (N_1), and three months after purchase (N_3). At shoe purchase, subjective ratings of old shoes (OS), initial ratings of new shoes (N_0), demographics, and decision-making processes were collected. Data on participants old shoes (i.e. their own shoes) were collected to act as a baseline comparator of a shoe that

participants were familiar with and selected prior to our video interventions. Given the design, outcomes of interest were compared between either two (OS, N_0; old shoes versus new shoe comparisons), three (N_0, N_1, N_3; all new shoe comparisons), or four (OS, N_0, N_1, N_3; old shoe and new shoe comparisons) time points. Participants were randomly allocated using stratified sampling to either: (1) a control video about running participation; or (2) an educational video based on the latest research about running footwear.

Randomisation and masking

A research assistant that was not involved in data collection generated randomisation lists using a random number generator (block randomisation; block sizes of 4, 6, 8). Randomisation was stratified according to gender (man/woman/other), foot strike pattern (rearfoot/non-rearfoot), and age (34 and under, 35 and over). Foot strike pattern was visually determined from recorded sagittal plane running videos provided by participants. Group allocations were concealed from all investigators and held by the research assistant to prevent investigator influence on allocation. Upon receiving participant characteristics, the research assistant assigned groups and sent the corresponding pre-recorded video to participants using identical procedures, ensuring standardisation across conditions. Participants also remained masked to their group allocation. Participants knew they were allocated to an educational video before buying shoes, but they did not know if they viewed the intervention or control video. They were also instructed not to reveal the content of the video to the primary investigator who was the contact for participants throughout the survey process. Group assignment was concealed from all investigators until after statistical analyses, with group labels masked during analysis. We had planned to assess participant masking through a survey question; however, this question had to be removed from analyses due to an error in the survey skip logic.

Interventions

The intervention group viewed an evidence-based video that described the current state of running shoe research of 7 min 32 s duration (accessible at this link: https://tinyurl.com/34umah8h). The video was an updated version from a module published in 2020 (Dhillon et al., 2020). The video synthesised research relating to running biomechanics, injury, shoe prescription, and joint loads, as described in the introduction. Literature relating to minimalist shoe construction, cushioning, heel-to-toe drop, and transitioning between footwear types was also included. The video prioritised findings from systematic reviews and randomised controlled trials when available. The video was overall designed to introduce runners to the minimalist index (Esculier et al., 2015) and increase awareness that shoe properties exist on a spectrum. It suggested that maximalist shoes do not reduce injury risk, given the literature indicating these increase vertical loading rates and knee joint forces. The final slide of this video summarising the key takeaways is presented in Figure 1. The video referenced 23 sources (Barton et al., 2016; Bonacci et al., 2018; Chan et al., 2018a, 2018b; Dye, 2005; Esculier et al., 2015, 2017; Knapik et al., 2014; Kulmala et al., 2018; Malisoux et al., 2016a, 2016b, 2021a, 2021b, 2023; Pollard et al., 2018; Rice et al., 2016; Ryan et al., 2011; Sinclair, 2014; Sinclair et al., 2016; Theisen et al., 2014; van der Worp et al., 2016; Warne & Gruber, 2017; Zadpoor & Nikooyan, 2011).

The control group was our sham video designed to emulate the educational video in design, number of commented slides, and duration. The video of 7 min 34 s in duration (accessible at this link: https://tinyurl.com/3bytyts8) contained information about worldwide running participation trends based on data gathered and distributed by RunRepeat.com (used with permission). Statistics included running participation, race distance popularity, and demographics. The video also reported top performances across common long-distance events and an interpretation of running trends based on World Records data from the World Athletics™ website, in addition to differences between men and women progression (Hubble & Zhao, 2016; Keogh et al., 2020). The control video did not mention anything about running footwear. The final slide of this video summarising the key takeaways is presented in Figure 1.

Playing of the assigned video was required within the Qualtrics survey for participants to progress through and complete the survey, at which point runners were instructed to purchase new running shoes at one of the participating specialty running stores in the area. Running stores, which were chosen because they offered a wide selection of road running shoe models, were aware that the study would bring runners into their store and offered a modest (10% or $10 depending on store) discount to participants on any shoe purchase. Salespeople were not aware of the content of the two videos, did not know group allocation, and were not involved in study planning, data collection, or outcome assessment. Salespeople were instructed to behave normally, although it is possible that runners discussed the content of the video.

The Qualtrics system did not allow us to track viewing time or to access advanced viewing metrics

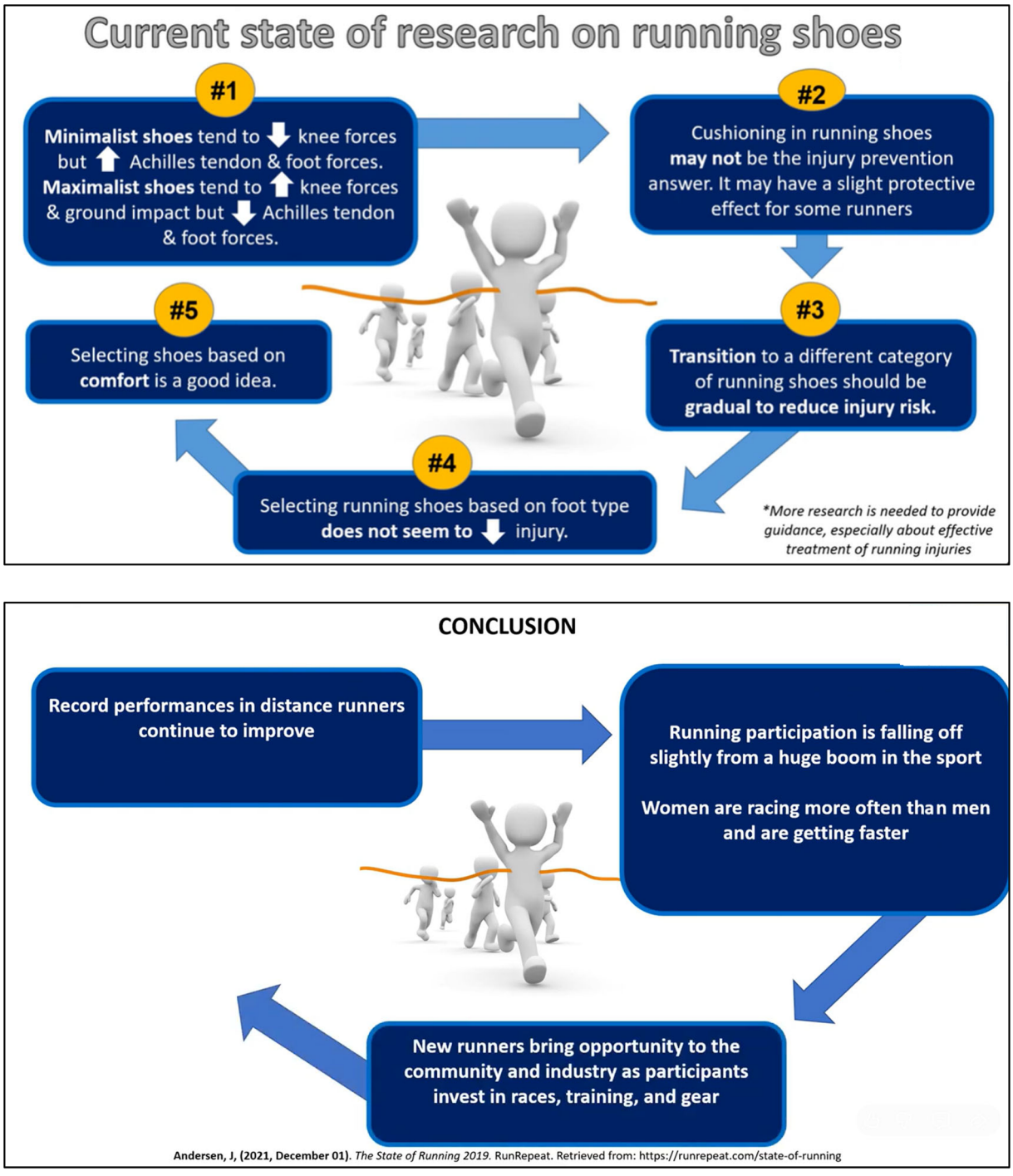

Figure 1. Concluding summary slides for the intervention group watching the evidence-based video (above) and the control group watching the sham video (below).

such as those available directly on YouTube. From the available metrics, we do know that the video was viewed in full in 82% of instances in the control group, and in 85% of instances in the intervention group. It is impossible to know how much of the assigned video was watched by the remaining participants who did not make it all the way to the end of the videos.

Outcomes

All data were collected using questionnaires housed on the XM Qualtrics survey system (www.qualtrics.com) (Supplemental Files 1–3). Data on demographics and running history, such as training patterns and race participation, were collected. The primary outcome was subjective comfort, with secondary outcomes including

subjective satisfaction and performance. These outcomes were collected for both old (N_0) and new (N_1) shoes. Perceptions of footwear comfort were measured using 100 mm visual analogue scale (VAS) with anchors 'extremely uncomfortable (0), neutral/uncertain (50), and extremely comfortable (100)' that were colour-coded across questions for congruence. Perceptions of footwear satisfaction were measured using 100 mm VAS with anchors 'extremely dissatisfied (0), neutral/uncertain (50), and extremely satisfied (100)'. Perceptions of the influence of footwear on running performance were measured using 100 mm VAS with anchors 'decreased performance (0), neutral/uncertain (50), and increased performance (100)'.

Factors that influenced running shoe purchase were selected from a 23-item list and ranked by importance during the first survey after shoe purchase (N_0). Participants answered 'yes' or 'no' regarding being familiar with the shoes before shopping. Runners reported how much the assigned video influenced their shoe purchase using a 100 mm VAS with anchors 'No, it did not influence how I selected my shoes (0), neutral/uncertain (50), and Yes, it did influence how I selected my shoes (100)'. The conscious buying approach was assessed using a 100 mm VAS question asking 'how much runners thought about making their purchase', with anchors 'Not at all (0), Neutral amount (50), and Very much (100)'.

We collected information regarding shoes purchased including brand, model, and price via the Qualtrics questionnaire, which was verified through store receipts. If further clarification was needed, participants were contacted via email. The minimalist index of shoes was calculated for both the new running shoes and old running shoes of participants based on the reported brand and model using a freely available website database (https://therunningclinic.com/shoes/). Briefly, the minimalist index considers five characteristics (mass, heel height, heel-to-toe drop, flexibility, and absence/presence of technologies) to establish the degree of minimalism of shoes, where 100% represents the highest level of minimalism and 0% the lowest (Esculier et al., 2015). A few minimalist index scores were not listed on the database, but the individuals maintaining the database were able to provide scores for the missing shoes. Shoe brand, shoe model, and minimalist shoe index were secondary outcomes.

Injuries were self-reported at N_1 and N_3 using a body chart that allowed runners to report the specific location of their injuries according to the following definition: *Running related (training or competition) musculoskeletal pain in the lower limbs or low back that causes a restriction on or stoppage of running (distance, speed, duration, or training) for at least 7 days or 3 consecutive scheduled training sessions, or that requires the runner to consult a physician or other health professional* (Yamato et al., 2015).

Sample size

A sample size of 112 participants (56 per group) was calculated a priori based on detecting a medium effect size difference (Cohen $d = 0.68$) in VAS achieving a power of $\beta = 0.90$ with an $\alpha = 0.025$. This calculation was based on assumptions of similar comfort VAS means and standard deviations (75 ± 15 mm) reported elsewhere (Hébert-Losier et al., 2022), and the meaningful change set to 10 mm (Mills et al., 2010). The alpha was set to 0.025 to account for multiple VAS comparisons (i.e. the main outcome of comfort and key secondary outcome of satisfaction).

The 112-runner sample size was not met due to recruitment challenges and resource constraints, resulting in a final sample of 56 participants. As the study did not reach its planned sample size, statistical power relative to the original design is lower and the risk of Type II error (false negatives) is greater. Consequently, null findings should be interpreted with caution. With the achieved sample size, the study had approximately 70% power to detect the originally specified effect size at $\alpha = 0.05$.

Statistical methods

Survey data were imported into Microsoft® Excel® (V 2302 Build 16.0.16130.20298) and analysed by group (control and intervention) using IBM SPSS Statistics (version 29.0.0.0 [241]) software. Data were checked for normality and compared between groups using t-tests or non-parametric alternatives for age, training volume, number of factors that influenced running shoe selection, perceived video influence, shoe price, and conscious behaviour. Two-tailed Fisher Exact Probability tests (2×2 and 2×3) were used to determine differences in the top three factors that influenced shoe selection, brands, and models of shoes purchased, and other nominal data between groups. Next generation models were considered as the same model in the Fisher Exact Probability analyses. Barnard's 2×2 tests were used for nominal data such as racing experience if group responses were zero (i.e. 400–800 m). The median value from the 100 mm VAS scores on how much runners thought about purchasing their running shoes was used to categorise runners as conscious

(≥ median) or unconscious (< median) buyers, based on the approach described by the unconscious thought theory framework (Dijksterhuis et al., 2006). Means with standard deviations and counts with percent values were used to describe the data. Bonferroni adjustments for multiple comparisons were used for comfort, satisfaction, and performance. P-values <0.050 were considered statistically significant. Effect sizes were reported using partial eta squared with η^2 0.01 considered small, η^2 0.06 considered medium, and η^2 0.14 considered large (Fritz et al., 2012). Two-way ANOVA were conducted for repeated-measures variables including subjective comfort, satisfaction, performance, running volume, and minimalist index scores. A consistent analytical framework was applied across all VAS outcomes, using the same group x time repeated-measures structure, but applied different numbers of time points based on relevance for a particular measure. Mean differences were reported with 95% confidence intervals [lower, upper].

Results

Participants

Recruitment ran for 6 months from June 1st, 2022 until December 1st, 2022. Data collection was finalised on March 23rd, 2023. Ninety-five participants were recruited and agreed to a phone call (Figure 2). Of the eligible participants, 62 (65.3%) received a group assignment, and 56 runners completed the three-month study (90.3% retention): 28 runners in the control group, and 28 runners in the intervention group. Participants in both groups were similar in terms of gender, age, and ethnicity. There was no statistically significant difference between groups in terms of running experience, weekly training patterns, foot strike pattern, and competitive race participation (Table 1). Both groups ran a similar amount in their shoes at each time point.

Comfort, satisfaction and performance

There was no significant main effect of time, main effect of group, or interaction when comparing comfort VAS scores over the four time points (Table 2). Similarly, there was no main effect of time, main effect of group, or interaction when comparing satisfaction VAS scores of the new shoes across the three time points (Table 2). However, there was a significant main effect of time on subjective shoe performance VAS scores over the four time points ($p = 0.006$, $\eta^2 = 0.083$) (Table 2). According to post-hoc testing, runners perceived increased subjective performance of new shoes (N_0) compared to their old shoes ($p = 0.006$, difference 8.2 mm [2.4, 14.0]). Perceived performance using the new shoes was lower after the time of purchase, decreasing both at N_1 ($p < 0.001$, difference 9.5 mm [5.7, 13.4]) and N_3 ($p = 0.018$, difference 6.9 mm [1.2, 12.5]), returning to their old shoes' values.

Shoe selection process

The intervention group reported being influenced (55.4 ± 32.7 mm) by the educational video more so than the control group (21.8 ± 29.8 mm) ($p < 0.002$, difference 33.6 mm [16.8, 50.4]). Runners identified fit (21.4%), comfort (17.9%), and a similar model to what they normally wear (16.1%) as the three most influencing factors when selecting shoes for the present study (Table 3). There was a non-statistically significant trend for more runners in the intervention group to purchase a new brand ($p = 0.054$, difference 28.6% points) and model ($p = 0.108$, difference 25.0% points) of shoes compared to the control group. Overall, 34 runners (60.7%) purchased new shoes of the same brand, and 29 (51.8%) purchased the same model as previously worn (Table 4). There was no significant main effect of time (OS, N_0), main effect of group, or interaction effect on the minimalist index of shoes (Table 4).

Consciousness

Responses to questions assessing conscious behaviour are reported in Table 5. The control group was more familiar with the shoes that they selected during the study than the intervention group prior to their purchase ($p = 0.014$, difference 32.1% points). Thirty-two runners (57.1%) were classified as conscious buyers based on the median split. After categorising runners as conscious and unconscious, there was a significant interaction effect ($p = 0.023$) in which unconscious buyers showed a tendency towards increased satisfaction over time, with conscious buyers a tendency towards decreased satisfaction (Table 6), though none of the post-hoc comparisons reached significance.

Injuries

Four runners (two from each group) were injured prior to purchasing new shoes. Three (5.4%) runners

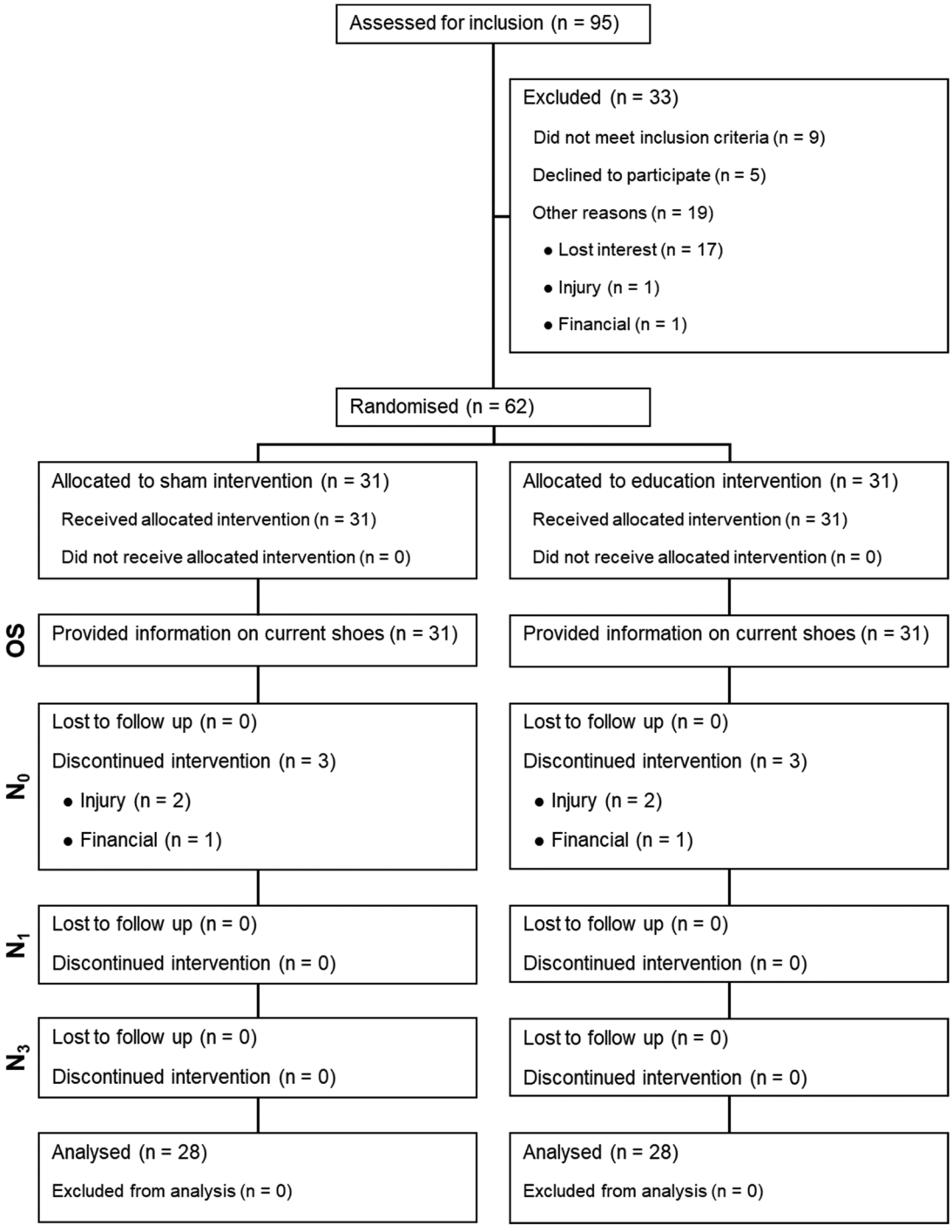

Figure 2. Flow diagram of participant progress through our parallel group randomised control trial with two groups, including enrolment, intervention allocation, follow-up, and data analysis.

(two in the intervention group, one in the control group) of the 56 completing the study reported an injury one month after purchasing new shoes. Injury locations included the anterior leg, foot and ankle region, and anterior hip. At three months, only one runner (1.8%) from the control group reported an injury (pain in the low back and bilaterally at the anterior leg).

Discussion

This is the first randomised controlled trial that assessed the effects of an evidence-based educational video on running shoe selection. This is also the first study to track perceived running shoe comfort, satisfaction, and performance of new shoes over time. The intervention group reported that the video influenced

Table 1. Participant characteristics and running experience.

	Control (n = 28)	Intervention (n = 28)	Combined (n = 56)	p value
Gender, n (%)				1.000[A]
Woman	13 (46.4)	12 (42.9)	25 (44.6)	
Man	15 (53.6)	16 (57.1)	31 (55.4)	
Other	0 (0.0)	0 (0.0)	0 (0.0)	
Ethnicity, n (%)				1.000[A]
White	26 (89.7)	25 (89.3)	51 (89.7)	
Hispanic or Latino	1 (3.4)	2 (7.1)	3 (5.3)	
Asian	2 (6.9)	1 (3.6)	3 (5.3)	
Age (years), Mean (SD)	36.9 (12.5)	39.7 (11.4)	38.3 (12.1)	0.376[B]
Foot strike pattern, n (%)				1.000[A]
Non rearfoot	7 (25)	8 (28.6)	15 (26.8)	
Rearfoot	21 (75)	20 (71.4)	41 (73.2)	
Running history, n (%)				0.101[A]
Between 0–3 years	3 (10.7)	9 (32.1)	12 (21.4)	
More than 3 years	25 (89.3)	19 (67.9)	44 (78.6)	
Race competitively, n (%)	17 (60.7)	12 (42.9)	29 (51.8)	0.285[A]
Raced within the last year, n (%)				
400–800 m	3 (10.3)	0 (0)	3 (5.4)	0.099[C]
1500–3200 m	6 (20.7)	2 (7.4)	8 (14.3)	0.254[A]
5 km	23 (82.1)	20 (71.4)	43 (76.8)	0.528[A]
8-10 km	21 (75)	18 (64.3)	39 (67.9)	0.562[A]
Half-marathon	16 (55.1)	16 (57.1)	32 (57.1)	1.000[A]
Marathon	5 (17.2)	6 (22.2)	11 (17.9)	0.742[A]
Ultra	9 (31.0)	3 (11.1)	12 (12.5)	0.104[A]
Other	5 (17.2)	1 (3.7)	6 (10.7)	0.195[A]
Weekly sessions (n), Mean (SD)				
N_0	4.6 (2.2)	4.0 (2.0)		Time 0.699, η2 = 0.01
N_1	4.5 (2.3)	3.8 (1.7)		Group 0.315, η2 = 0.02
N_3	4.4 (1.7)	4.3 (2.5)		Interaction 0.299, η2 = 0.02
Δ [95% CI]				
N_1-N_0	−0.1 [−0.7, 0.5]	−0.1 [−0.8, 0.5]		
N_3-N_0	−0.3 [−0.8, 0.3]	0.3 [−0.3, 0.9]		
Weekly distance (km), Mean (SD)				
N_0	46.9 (40.8)	35.1 (32.4)		Time 0.692, η2 = 0.01
N_1	43.7 (36.2)	34.6 (29.6)		Group 0.265, η2 = 0.02
N_3	45.4 (31.9)	36.9 (36.4)		Interaction 0.791, η2 = 0.00
Δ [95% CI]				
N_1-N_0	−3.2 [−11.3, 4.9]	−0.6 [−8.7, 7.5]		
N_3-N_0	1.5 [−10.8, 13.8]	1.8 [−10.6, 14.1]		
Volume in new running shoes (%)				
N_1	81.3 (21.3)	71.8 (25.4)		Time 0.920, η2 = 0.00
N_3	74.6 (31.0)	74.3 (28.2)		Group 0.097, η2 = 0.05
Δ [95% CI]				Interaction 0.423, η2 = 0.01
N_3-N_1	−6.8 [−15.7, 2.2]	2.5 [−6.5, 11.5]		

Note. [A]Fisher's Exact Probability Test, [B]Kruskal-Wallis, [C]Barnard's Test. Two-way ANOVA included three time points: new shoes (N_0), one month (N_1), three months (N_3). The mean difference from baseline is denoted by *Δ*.

shoe selection more so than the control group, and that they were less familiar with the shoes purchased for the study. Similar rates of runners in both groups purchased the same brand and model as their previous shoes, although there was a statistical trend towards the intervention group buying different brands and models. Given our reduced statistical power, this non-significant result should be viewed as inconclusive, rather than definitive.

Overall, there was no clear evidence of the educational video affecting how runners perceived or selected their new shoes. Our findings contrast with previous research, where runners stated that a similar educational module would influence their future shoe selection (Dhillon et al., 2020). Our educational video was designed to introduce runners to the minimalist index concept (Esculier et al., 2015) and that shoes exist on a spectrum, encouraging runners to reflect on minimalist designs and the overrated role of technological shoe features on injury prevention (Malisoux & Theisen, 2020). There was no clear difference in the minimalist index scores between groups and time points. Minimalist shoes are generally less cushioned than traditional shoes (Esculier et al., 2015), and may be less comfortable for runners used to cushioned shoes (Kong & Bagdon, 2010), at least in the short-term. It is possible that runners who purchase more minimalist shoes may be less comfortable initially, but adapt and become more comfortable over time. The similarity in comfort ratings between groups can most likely be attributed to participant shoe choice not being overly different from what they wore

Table 2. Footwear comfort, satisfaction, and performance ratings over time using 100 mm visual analogue scales.

	Control (n = 28)	Intervention (n = 28)	p value, η^2
Comfort (mm), Mean (SD)			
OS	86.3 (11.4)	81.9 (20.3)	**Time** 0.812, η^2 = 0.004
N_0	87.6 (12.3)	79.9 (18.0)	**Groups** 0.079, η^2 = 0.056
N_1	88.1 (11.6)	83.4 (16.5)	**Interaction** 0.827, η^2 = 0.005
N_3	86.3 (11.5)	83.3 (20.6)	
Δ [95% CI]			
N_0-OS	1.4, [−8.9, 11.6]	−2.0 [−12.3, 8.3]	
N_1-OS	1.9 [−9.7, 13.4]	1.5 [−10.1, 13.0]	
N_3-OS	0.0 [−12.8, 12.8]	1.4 [−11.5, 14.2]	
Satisfaction (mm), Mean (SD)			
N_0	88.6 (12.5)	84.9 (16.9)	**Time** 0.462, η^2 = 0.013
N_1	85.6 (13.1)	85.6 (16.7)	**Groups** 0.534, η^2 = 0.007
N_3	85.7 (15.0)	82.4 (26.1)	**Interaction** 0.634, η^2 = 0.007
Δ [95% CI]			
N_1-N_0	−3.0 [−10.5,4.5]	0.7 [−6.8, 8.2]	
N_3-N_0	−2.9 [−12.7, 6.9]	−2.6 [12.4, 7.2]	
Performance (mm), Mean (SD)			
OS	68.7 (16.4)	66.4 (21.1)	**Time** 0.006[a], η^2 = 0.083[e]
N_0	76.8 (14.6)	74.7 (18.4)	OS-N_0 0.006[b]
N_1	67.2 (14.7)	65.3 (19.6)	N_0-N_1 < 0.001[c]
N_3	68.3 (18.2)	69.5 (19.0)	N_0-N_3 0.018[d]
Δ [95% CI]			
N_0-OS	8.1 [−3.1, 19.2]	8.3 [−2.8, 19.5]	**Groups** 0.710, η^2 = 0.003
N_1-OS	−1.5 [−13.7, 10.7]	−1.1 [−13.3, 11.0]	**Interaction** 0.855, η^2 = 0.004
N_3-OS	−0.4 [−12.9, 12.0]	3.1 [−9.4, 15.6]	

Note. Two-way ANOVA of comfort and performance included four time points: old shoes (OS), new shoes (N_0), one month (N_1), three months (N_3). Satisfaction was compared across three time points: (N_0), (N_1), (N_3). Main effects were further explored in post-hoc testing. [a]indicates main effect of time, [b]indicates difference from old shoes to new shoes, [c]indicates difference from new shoes to one month. [d]indicates difference from new shoes to three months. [e]indicates medium effect size based on common interpretation of partial eta squared (η^2). The mean difference from baseline is denoted by *Δ*.

Table 3. Factors that influenced running shoe selection, mean (SD).

	Control (n = 28)	Intervention (n = 28)	Total	p value
Number of influencing factors	5.8 (2.6)	6.5 (2.7)	6.1 (2.7)	0.318[B]
Video influence on shoe selection (mm)	21.8 (29.8)	55.4 (32.7)	38.6 (35.5)	0.002[B]
Most influential factor, n (%)	Fit: 6 (21.4)	Fit: 6 (21.4)	12 (21.4)	1.000[A]
	Similar Model: 6 (21.4)	Similar Model: 3 (10.7)	9 (16.1)	0.469[A]
	Comfort: 4 (14.3)	Comfort: 6 (21.4)	10 (17.9)	0.729[A]

Note. Video influence was rated using a visual analogue scale with anchor points as follows: 0 mm – 'not at all' and 100 mm – 'very much'. [A]Fisher's Exact Probability Test, [B]Kruskal-Wallis.

previously. With the advent of advanced footwear technologies with thick midsoles and rigid elements (Hébert-Losier & Pamment, 2023), the current running footwear market is geared towards more (rather than less) cushioning. The potentially lower availability of more minimalist designs and absence of minimalist shoe ratings in stores might have contributed to the lack of significant difference in minimalist index scores between groups and time points. None of the stores featured the minimalism index alongside their shoes. Despite running stores being selected due to their wide selection of road running shoe models, the range of shoes offered was outside of the researchers' control.

Perceived shoe performance influences selection (Dhillon et al., 2020; Ramsey et al., 2022; Walton & French, 2016). Indeed, runners and non-runners alike believe that shoes have a positive effect on performance (Nguyen et al., 2023). Participants reported perceiving a significant performance improvement in their new shoes compared to their old shoes (medium effect size). However, this result may not be clinically meaningful, since the VAS difference was only 8.1 mm, and running performance was not objectively assessed. Minimally clinically important differences are set to 9.6 to 10.2 mm for VAS footwear comfort (Mills et al., 2010), with test-retest of VAS footwear performance scores presenting typical errors of 6.3 to 7.6 mm (Fife et al., 2025; Hébert-Losier et al., 2025b). One month after purchase, perceived performance decreased to the baseline of old shoes and remained similar at the three-month survey. Changes in perceived performance in such a short time (i.e. in the first month, approximately 160 km of wear based on average weekly running distances) is likely due to a combination of psychological responses and novelty effect (Hébert-Losier et al., 2025b), shoe degradation (Chambon et al., 2014; Lippa et al., 2019; Wang et al., 2012), and measurement sensitivity (Fife et al., 2025; Hébert-Losier et al., 2025b).

Table 4. Shoe selection behaviour based on brand and model, and shoe characteristics.

	Control (n = 28)	Intervention (n = 28)	Total (n = 56)	p value, η^2
Shoes purchased for the study were the same brand as old shoes, n (%)	21 (75.0)	13 (46.4)	34 (60.7)	0.054[A]
Shoes purchased for the study were the same model as old shoes, n (%)	18 (64.3)	11 (39.3)	29 (51.8)	0.108[A]
Minimalist Index (%), Mean (SD)				
OS	35.2 (12.8)	34.0 (11.2)	34.6 (11.9)	Time 0.730, η^2 = 0.002
N_0	33.8 (12.8)	36.4 (13.2)	35.1 (13.0)	Groups 0.823, η^2 = 0.001
Δ [95% CI]				Interaction 0.195, η^2 = 0.031
N_0-OS	−1.4 [−5.5, 2.7]	2.4 [−1.7, 6.5]		
Shoe price (USD), Mean (SD)				
OS	128.3 (31.5)	125.8 (31.7)	127.0 (31.3)	Time 0.206, η^2 = 0.031
N_0	134.6 (24.9)	135.8 (22.3)	135.2 (23.3)	Groups 0.884, η^2 = 0.000
Δ [95% CI]				Interaction 0.770, η^2 = 0.002
N_0-OS	6.2 [−12.2, 24.7]	10.0 [−7.5, 27.4]		

Note. Shoes that were the next generation of model were considered the same as specialty stores do not typically carry multiple model years. [A]Fisher's Exact Probability Test, [B]Kruskal-Wallis. Two-way ANOVA included two time points: Old shoes (OS), new shoes (N_0). Percentages on the Minimalist Index are ordered such that 0% indicates more maximalist shoe construction and 100% indicates more minimalist construction. The mean difference from baseline is denoted by *Δ*.

Table 5. Summary of consciousness during shoe selection.

	Control (n = 28)	Intervention (n = 28)	Combined (n = 56)	p value
Shoe familiarity (yes/no), n (%)	25 (89.3)	16 (57.1)	41 (73.2)	0.014[A]
Thought about making shoe purchase (mm), Mean (SD)	57.6 (32.2)	70.2 (20.3)	63.9 (20.7)	0.091
Thought about shoes from seeing to purchase (mm), Mean (SD)	57.5 (30.7)	60.2 (31.8)	58.9 (31.3)	0.757
New shoe satisfaction (mm), Mean (SD)	88.6 (12.2)	84.9 (16.6)	86.8 (14.9)	0.458[B]
Number of 'conscious' buyers, n (%)	14 (50.0)	18 (62.3)	32 (57.1)	0.418

Note. The question 'How much did you think about making your purchase?' was used to categorise runners as conscious or unconscious shoppers. Consciousness was determined based on combined median split of 70 mm. Runners were divided as 'conscious' if they scored 70 mm or more using a 100 mm visual analogue scale. Price was self-reported and not checked for accuracy. Anchor points for visual analogue scales were as follows: 0 mm – 'not at all' and 100 mm – 'very much'. [A]Fisher's Exact Probability Test, [B]Kruskal-Wallis.

Table 6. Shoe satisfaction based on consciousness.

	Conscious (n = 32)	Unconscious (n = 24)	p value, η^2
Satisfaction (mm), Mean (SD)			
N_0	88.2 (14.3)	84.4 (17.1)	Time 0.681, η^2 0.006
N_1	84.4 (17.1)	87.3 (11.4)	Groups 0.411, η^2 0.013
N_3	79.8 (25.7)	89.7 (11.2)	Interaction 0.023[a], η^2 0.073[m]
Δ [95% CI]			
N_1-N_0	−3.8 [−10.7, 3.1]	2.4 [−5.6, 10.4]	
N_3-N_0	−8.4 [−17.1, 0.3]	4.8 [−5.3, 14.8]	

Note. The question 'How much did you think about making your purchase?' was used to categorise runners as conscious or unconscious shoppers. Consciousness was determined based on combined median split of 70 mm. Runners were divided as 'conscious' if they scored 70 mm or more using a 100 mm visual analogue scale. Anchor points for visual analogue scales were as follows: 0 mm – 'not at all' and 100 mm – 'very much'. Two-way ANOVA included three time points: new shoes (N_0), one month (N_1), three months (N_3). [a] indicates significant interaction effect. The mean difference from baseline is denoted by *Δ*.

We also hypothesised that unconscious buyers would be more satisfied with their purchases, agreeing with our observed interaction effect. Unconscious runners reported increased satisfaction over time, while conscious runners were less satisfied with their shoes. Running shoe selection can be considered a complex decision influenced by many factors such as comfort, price, and colour (Fife et al., 2023). Complex decisions are aided by unconscious thought processes (Dijksterhuis & Nordgren, 2006), which may explain the increase in satisfaction over time for the unconscious buyers. Running shoe choice in specialty stores also requires runners to select from a large assortment of options; a situation in which less conscious processing can be beneficial (Messner & Wänke, 2011). Runners may benefit from spending time and energy carefully considering shoes, then 'sleeping on' a decision to allow unconscious processes to guide their actions (Bos et al., 2011). It is worth noting, however, that the largest change in satisfaction over time within each group of 8.4 mm (conscious) and 4.8 mm (unconscious) might not be clinically meaningful, as not reaching the threshold of 9.6 to 10.2 mm established for footwear comfort (Mills et al., 2010).

Brand affinity and shoe familiarity may have superseded the educational video in importance when the time came to purchase shoes. Familiarity is known to influence purchasing behaviour in online shopping situations (Zaid, 2020). Given that runners identified fit, comfort, and choosing a similar model as most important to their running shoe selection in-store, runners that find shoes that 'work well for them' may lean towards familiarity, sometimes even stockpiling their preferred model to avoid change (Ramsey et al., 2022). Familiarity is a critical factor in comfort, performance, and injury risk perceptions of novel running shoes (Hébert-Losier et al., 2025a). Shoes that are more familiar to runners may increase processing fluency, a phenomenon whereby familiar stimuli are easier to process mentally and, as a result, perceived as preferable or more comfortable (Reber et al., 2004). More positive perceptions of runners to familiar brands or previously worn models are consistent with the mere exposure effect, in which repeated exposures to a stimulus enhances positive affect towards it (Zajonc, 2001). It could be that runners feel specific brands offer them a better fit and, regardless of an intervention or recommendation, will maintain their shoe purchasing patterns.

Runners tend to prefer practical over academic knowledge (Walton & French, 2016) and seek advice from running shoe retailers and websites more frequently than scientific literature (Dhillon et al., 2020). Moreover, minimalist shoes are seen as less conventional and comfortable than traditional running shoes (Walton & French, 2016). An evidence-based educational video outlining that technologies in traditional shoes do not prevent injuries, and thus, suggesting runners to consider less conventional shoes, may have been too novel for runners. As comfort is critical to running shoe choice, runners may not be willing to sacrifice traditional cushioning to experiment with an unfamiliar shoe with less cushioning.

Limitations

The subjective perceptions of footwear comfort, satisfaction, and performance reported in the questionnaires may not have fully encapsulated how runners interacted with their footwear. While a more complex rating system may have captured nuanced perceptions, the questionnaires were designed to be simple and relatively short to increase the likelihood of participant compliance. Runners may have responded differently to the information in the video if it were presented in alternative format or media. It is possible that our video presentation was not as engaging or informative as needed for behavioural change. Although participants were required to play the video within their Qualtrics survey, no comprehension check was put in place to confirm exposure and understanding of key messages. Reaching the planned sample size of 112 runners could have allowed us to capture smaller differences in subjective ratings between groups.

Unconscious thought theory has been established based on studies manipulating states of consciousness, with limited research examining post decision-making. The division between conscious and unconscious buyers may not fully reflect runners' thought processes. Due to an error in the digital survey skip logic, the question used to assess masking effectiveness was removed. Consequently, the success of participant masking to their allocation could not be evaluated.

Conclusion

An evidence-based educational video did not influence perceived running shoe comfort, satisfaction, or performance over time. Although runners believed that the video influenced their shoe selection, both groups often chose the same brand and model of shoe as previously worn. In both groups, runners prioritised fit, comfort, and getting a similar model to previously used shoe when selecting new shoes in store. Participants that were classified as unconscious buyers were more satisfied over time. Future research should seek to identify whether runners' shoe selection practices can be influenced directly in store.

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Ethics approval

The HECS Human Research Ethics Committee of the University of Waikato granted ethical approved to conduct this trial (HREC(HECS)2021#31.1), which followed the Declaration of Helsinki.

Author contributions

AF: Conceptualisation, Methodology, Investigation, Formal Analysis, Investigation, Data Curation, Writing – Original Draft, Writing – Review & Editing, Visualisation, Project Administration. **JFE**: Conceptualisation, Methodology, Formal Analysis, Writing – Review & Editing, Visualisation, Supervision. **KHL**: Conceptualisation, Methodology, Formal

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Disclosure statement

JFE is employed by the Running Clinic™, a continuing education organisation that translates scientific evidence to healthcare professionals and the public. KHL is a speaker for the Running Clinic™. No footwear company or industry was involved in this research project.

Trial registration

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Data availability statement

The data that support the findings of this study are available upon reasonable request from the first author [AF]. The data are not publicly available as the participants did not provide consent for their data to be shared in online public repositories.

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