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Original Research

The effect of a single functional neurology session on thermography of the genital region and sexual function in patients with premature ejaculation

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Abstract

Background: Premature ejaculation (PE) is a common male sexual dysfunction with limited long-term therapeutic options. Pharmacological and behavioral treatments often yield only temporary improvement, and alternative neuromodulatory strategies remain underexplored. Functional neurology, which targets autonomic and sensory-motor regulation, may offer a novel approach.

Aim: To evaluate the effect of a single functional neurology intervention on genital thermoregulation and ejaculatory latency in men with PE.

Methods: Fifty-two men diagnosed with PE participated in a pre–post intervention study. Each underwent a single session of functional neurology aimed at modulating nociceptor and mechanoreceptor pathways. Genital thermoregulation was assessed using infrared thermography, and ejaculatory function was measured via intravaginal ejaculatory latency time (IELT) and self-report at baseline, after the first post-treatment sexual encounter, and at 1-month follow-up. Statistical analyses included repeated-measures ANOVA, paired *t*-tests, Pearson correlation, and multiple regression.

Outcomes: Significant improvements in IELT and genital temperature were expected following the intervention, supporting its role in enhancing autonomic regulation and microvascular circulation.

Results: Intravaginal ejaculatory latency time increased significantly from a baseline of 20.4 ± 11.5 seconds to 439.2 ± 214.5 seconds post-treatment, with sustained effects at 1 month (498.0 ± 171.6 seconds; $P < .001$). Infrared thermography revealed significant increases in temperature in the glans, testicles, and abdomen (all $P < .001$), indicating enhanced peripheral circulation. Glans temperature change was the strongest predictor of testicular thermoregulation ($\beta = 0.513$, $P < .001$). Principal component analysis highlighted that glans and testicular areas contributed most to thermal variance post-treatment. A ≥ 1 °C increase in genital temperature was observed in 60% of participants.

Clinical Implications: Functional neurology may be a non-invasive, fast-acting intervention for improving ejaculatory control in PE by promoting autonomic balance and vascular function. Thermography proved useful as a biomarker for physiological changes and treatment efficacy.

Strengths and Limitations: This study is the first to evaluate thermographic and ejaculatory outcomes after a functional neurology intervention in PE. Strengths include objective and subjective measures, while limitations involve the lack of a control group, small sample size, and short-term follow-up. These results should be confirmed through randomized controlled trials.

Conclusion: A single session of functional neurology significantly improved both genital thermoregulation and ejaculatory latency in men with PE. These findings support the integration of neuromodulatory techniques into multidisciplinary strategies for sexual dysfunction treatment.

Keywords: premature ejaculation; ejaculation; premature; intravaginal ejaculatory latency time; functional neurology; autonomic nervous system; thermography; genital blood flow; vascular regulation.

Introduction

Premature ejaculation (PE) is 1 of the most common male sexual dysfunctions, with prevalence rates varying due to differences in definitions, methodologies, and cultural contexts. Studies report prevalence rates of 22.7% in the United States, Germany, and Italy, with 24.0% in the United States, 20.3% in Germany, and 20.0% in Italy.[1] Similarly, multinational surveys show rates of 19.8% and 25.8% in Turkish and Chinese populations, respectively.[2] While some research suggests that PE prevalence remains stable after age 24,[3] other studies highlight psychological and relational factors as key contributors.[4] Variability in reported prevalence underscores the need for standardized diagnostic criteria. The most recent unified definitions proposed by the

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International Society for Sexual Medicine incorporate ejaculatory control, latency time, and associated distress, providing more reliable diagnostic thresholds for both lifelong and acquired PE.[5]

Premature ejaculation is a multifactorial condition influenced by neurobiological and psychosocial factors. Serotonergic dysfunction, particularly reduced 5-HT2C receptor activity and 5-HT1A hypersensitivity, leads to impaired inhibition of the ejaculatory reflex.[6,7] Dopamine and oxytocin also play a role, with excessive activity potentially worsening symptoms.[4] Psychological factors, such as anxiety and depression, further contribute by heightening sympathetic activity and disrupting serotonergic function.[8] Interpersonal and cultural influences, including relationship dissatisfaction and performance expectations, can exacerbate distress and perpetuate PE.[5] Given this complexity, effective treatment must integrate both physiological and psychological interventions.

The management of PE includes pharmacological and non-pharmacological approaches. Selective serotonin reuptake inhibitors, particularly dapoxetine, are the most prescribed drugs due to their ability to prolong intravaginal ejaculatory latency time (IELT) with minimal side effects.[9,10] Other pharmacological options include topical anesthetics and tramadol, though the latter has dependency concerns.[11,12] Non-pharmacological treatments, such as cognitive behavioral therapy, behavioral techniques like the "stop–start" method, and pelvic floor muscle training, have shown efficacy in enhancing ejaculatory control.[8,13,14] Combination therapy, integrating pharmacological and behavioral strategies, has been found to be the most effective approach, especially for mixed etiology cases,[15] though patient adherence remains a key factor for long-term success.

Premature ejaculation remains difficult to treat, as pharmacological and behavioral approaches often provide only temporary relief. Functional neurology, which targets neural network modulation and sensorimotor integration, has emerged as a potential alternative.[16] Ejaculation involves sympathetic, parasympathetic, and somatic nervous system interactions, and dysfunctions in these pathways may contribute to PE. Functional neurology interventions, such as neurofeedback, vestibular rehabilitation, and nociceptor stimulation, aim to restore autonomic balance and neuromuscular control.[17,18] Functional neurology interventions aim to stimulate sensorimotor integration circuits to optimize autonomic responses. Techniques such as mechanoreceptor and nociceptor stimulation, combined with blink reflex modulation, may influence central autonomic pathways through brainstem nuclei, including the nucleus tractus solitarius and the periaqueductal gray. These structures are involved in regulating ejaculation via sympathetic and parasympathetic control. By modulating these networks, a single session of multimodal sensorimotor stimulation may promote autonomic rebalancing, increase genital blood flow, and delay ejaculatory reflexes.[19-22]

Previous studies have shown that a single session can enhance neuromuscular function, reduce pain, and improve recovery,[19] supporting its potential application in PE treatment. This study aimed to analyze the effects of a single functional neurology intervention on genital thermoregulation and sexual function. We hypothesized that a single session of functional neurology intervention would significantly increase genital skin temperature and intravaginal ejaculatory latency time in men with PE.

Methods

Participants

A total of 56 healthy male participants were initially considered for inclusion in this study. After screening, 4 participants were excluded for not meeting the study criteria. Then, a total of 52 healthy male participants were included in this study. The mean age of the participants was 28.2 ± 5.1 years, with a mean height of 174.8 ± 4.8 cm and a mean body weight of 73.5 ± 3.9 kg. The calculated body mass index was 24.0 ± 1.7 kg/m^2. All participants presented with PE, with at least 6 months of symptomatic history. They were free from any neurological or musculoskeletal conditions that could interfere with the study procedures. Inclusion criteria were[1]: male participants aged 18-45 years[2]; clinical diagnosis of PE (IELT $\leq$1 minute in $\geq$75% of penetrative encounters)[3]; stable sexual relationship; and[4] presence of symptoms for at least 6 months. Exclusion criteria included[1]: diagnosis of erectile dysfunction or other sexual disorders[2]; use of PE medication or psychotherapy during the study[3]; neurological, endocrine, or psychiatric disorders[4]; pelvic trauma or surgery; and[5] substance abuse or dependence.

The participants provided written informed consent before participation, and the study was conducted following the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the institutional review board of Universidad Europea de Madrid (approval code: 2024-738, June 13, 2024). The first participant was enrolled on July 15, 2024, following ethical clearance. The study protocol was retrospectively registered in the UMIN Clinical Trials Registry on April 13, 2025 for transparency and documentation purposes.

Procedure

The procedure included a baseline thermography assessment, followed by a 10-minute functional neurology intervention targeting thermal regulation and sensory processing. A second thermography assessment was conducted immediately after treatment to evaluate acute temperature changes, and participants were monitored for 1 month to assess symptom recurrence. Peripheral vascular response was analyzed using infrared thermography in the abdomen, thighs, glans, and testicles, following European Association of Thermology guidelines.[20] Data were acquired with a FLIR ONE Edge Pro (Teledyne FLIR, USA) and analyzed using FLIR Tools software, allowing for objective monitoring of blood flow distribution and thermoregulatory changes.[21,22]

The thermal images were captured from an anterior perspective, with specific regions of interest labeled for precise temperature analysis (Figure 1). The following anatomical areas were assessed:

- Bx1 (abdomen): Represents core temperature regulation and visceral circulation. This region provides insights into systemic thermoregulatory processes and serves as a reference for detecting autonomic responses.
- Bx2 (right thigh): Reflects the peripheral vascular response of the lower limb, capturing changes in blood flow distribution and autonomic modulation.
- Bx3 (left thigh): Functions as a contralateral comparison to the right thigh, allowing for the assessment of vascular symmetry and potential lateralized thermoregulatory differences.

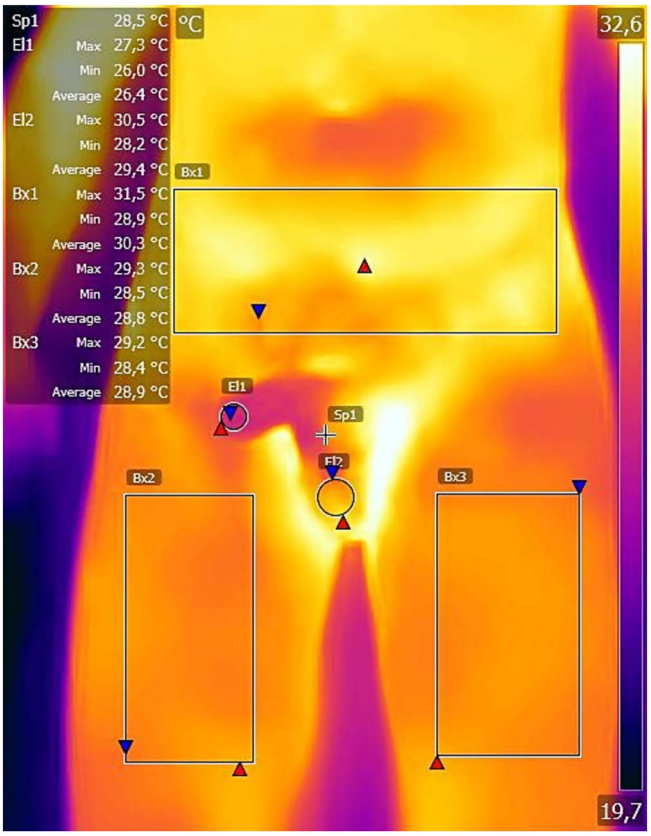

Figure 1. Regions of interest analyzed with thermography.

- Sp1 (glans): A highly vascularized distal penile structure, representing localized blood flow changes and autonomic nervous system regulation.
- El1 (testicles): Captures scrotal temperature, which is influenced by thermoregulatory mechanisms critical for testicular function and reproductive health.

All assessments were performed under controlled environmental conditions, with room temperature set at 22-24 °C and humidity at 45%-52%. Participants were instructed to refrain from consuming alcohol, caffeine, or engaging in vigorous exercise 12 hours before testing.

A threshold of ≥1 °C was adopted to define clinically relevant thermal changes. This cut-off has been employed in prior thermographic studies to identify physiologically meaningful shifts in cutaneous blood flow, especially in response to interventions targeting autonomic modulation or microvascular dynamics.[23-25]

Additionally, self-reported ejaculation latency time was recorded at 3 time points: prior to the treatment, during the first sexual encounter following the functional neurology intervention, and 1 month post-treatment.

Functional neurology intervention

The functional neurology intervention followed the *NeuroReEvolution* methodology (http://nre-therapy.com/), beginning with a clinical history to identify underlying dysfunctions. A systematic assessment was conducted to detect dysfunctional nociceptors and mechanoreceptors using specific stimuli and observing their effect on an indicator muscle, typically the anterior deltoid.[22] Once identified, these receptors were treated through *NeuroReEvolution* techniques, integrating blink reflex responses to restore neurological balance, enhance neuromuscular coordination, and improve sensorymotor regulation.[17,18] The intervention was performed by a certified Level III practitioner in Functional Neurology Manual Muscle Testing, ensuring expertise in diagnosing and treating nervous system dysfunctions related to PE.

Statistical analysis

Statistical analyses were conducted using IBM SPSS (v24.0) and Python (Scipy, Statsmodels). Normality was assessed with the Kolmogorov–Smirnov test, allowing the use of parametric methods. A repeated-measures ANOVA evaluated IELT changes across 3 time points, while paired-samples *t*-tests with Cohen's *d* assessed pre- and post-treatment thermal differences. Pearson correlation and multiple linear regression analyzed relationships between temperature changes, particularly their predictive capacity for testicular thermoregulation. Participants were stratified into 2 groups based on their baseline abdominal temperature using the sample median value (33.0 °C) as the cut-off point. Those with temperatures below the median were classified as the "lower temperature group" and those above or equal to the median as the "higher temperature group." Boxplots visualized temperature distributions, and the clinical significance of ≥1 °C temperature changes was determined. Lastly, PCA identified key patterns in thermal variations. Significance was set at $P \leq .05$.

Results

A significant increase in IELT was observed following the functional neurology intervention [$F(2, 102) = 109.95$, $P < .001$, $\eta^2 = 0.812$). Prior to treatment, the mean IELT was 20.4 ± 11.5 seconds (Table 1). After the first sexual encounter post-treatment, IELT increased significantly to 439.2 ± 214.5 seconds. This improvement was sustained at the 1-month follow-up, with an IELT of 498.0 ± 171.6 seconds. The intervention also led to statistically significant temperature increases across all measured regions, with the most pronounced changes in the glans, testicles, and abdomen. Both thigh regions showed moderate effects. These findings suggest enhanced microvascular circulation and autonomic modulation following the functional neurology intervention (Figure 1).

Table 2 presents the relationships between absolute (Δ) and percentage (% Δ) changes in temperature across different anatomical regions. The correlation coefficients (*r*) and significance values (*P*) indicate the strength and statistical relevance of these associations. Notably, a moderate positive correlation was observed between Δ Abdomen and Δ Left thigh ($r = 0.333$, $P = .018$), suggesting a linked thermal response between these areas. Additionally, % Δ Testicles and % Δ Abdomen showed a moderate negative correlation ($r = -0.264$, $P = .064$), although it did not reach statistical significance. The strongest relationships were generally observed within the same category (absolute vs. absolute and percentage vs. percentage), while cross-category correlations were weaker.

Table 3 shows that glans temperature change (Δ Glans) had the strongest and most significant influence on testicular temperature variations ($\beta = 0.513$, $P < .001$), indicating its key role in testicular thermal regulation. Changes in abdominal, right thigh, and left thigh temperatures were not statistically

Table 1. Mean and standard deviation changes in measured regions pre- and post-intervention.

Region	Pre Mean ± SD	Post Mean ± SD	*t*-statistic	*P*-value	Cohen's *d*
Abdomen (°C)	32.45 ± 1.83	33.55 ± 1.88	−6.175	$P < .001$	0.59
Right thigh (°c)	31.82 ± 2.10	32.94 ± 2.06	−6.418	$P < .001$	0.54
Left thigh (°C)	31.79 ± 2.19	32.98 ± 2.15	−5.813	$P < .001$	0.54
Glans (°C)	30.94 ± 2.49	32.74 ± 2.18	−6.430	$P < .001$	0.77
Testicles (°C)	31.89 ± 2.19	33.27 ± 2.13	−6.289	$P < .001$	0.64

Table 2. Correlation analysis of thermal changes (Δ -Delta- and % Δ) across regions.

Region	Δ Abdomen	% Δ Abdomen	Δ Right thigh	% Δ Right thigh	Δ Left thigh	% Δ Left thigh	Δ Glans	% Δ Glans	Δ Testicles	% Δ Testicles
Δ Abdomen	-	$r = 0.110$, $P = .447$	$r = -0.126$, $P = .385$	$r = 0.107$, $P = .460$	$r = 0.333$, $P = .018$	$r = 0.227$, $P = .113$	$r = -0.206$, $P = .152$	$r = -0.290$, $P = .041$	$r = -0.018$, $P = .903$	$r = -0.168$, $P = .242$
% Δ Abdomen	$r = 0.110$, $P = .447$	-	$r = -0.231$, $P = .106$	$r = -0.173$, $P = .230$	$r = -0.159$, $P = .269$	$r = 0.065$, $P = .652$	$r = -0.007$, $P = .964$	$r = -0.170$, $P = .239$	$r = 0.203$, $P = .157$	$r = -0.264$, $P = .064$
Δ Right thigh	$r = -0.126$, $P = .385$	$r = -0.231$, $P = .106$	-	$r = 0.054$, $P = .709$	$r = 0.173$, $P = .230$	$r = -0.008$, $P = .954$	$r = -0.012$, $P = .933$	$r = 0.118$, $P = .415$	$r = 0.173$, $P = .231$	$r = -0.085$, $P = .559$
% Δ Right thigh	$r = 0.107$, $P = .460$	$r = -0.173$, $P = .230$	$r = 0.054$, $P = .709$	-	$r = -0.027$, $P = .853$	$r = -0.267$, $P = .061$	$r = 0.215$, $P = .134$	$r = -0.034$, $P = .815$	$r = -0.166$, $P = .249$	$r = 0.214$, $P = .136$
Δ Left thigh	$r = 0.333$, $P = .018$	$r = -0.159$, $P = .269$	$r = 0.173$, $P = .230$	$r = -0.027$, $P = .853$	-	$r = 0.300$, $P = .034$	$r = -0.012$, $P = .933$	$r = -0.147$, $P = .308$	$r = -0.088$, $P = .543$	$r = -0.216$, $P = .132$
Δ Glans	$r = -0.206$, $P = .152$	$r = -0.007$, $P = .964$	$r = -0.012$, $P = .933$	$r = 0.215$, $P = .134$	$r = -0.012$, $P = .933$	$r = -0.147$, $P = .308$	-	$r = 0.995$, $P = 1.000$	$r = 0.921$, $P = .000$	$r = 0.919$, $P = .000$
% Δ Glans	$r = -0.290$, $P = .041$	$r = -0.170$, $P = .239$	$r = 0.118$, $P = .415$	$r = -0.034$, $P = .815$	$r = -0.147$, $P = .308$	$r = -0.560$, $P = .000$	$r = 0.995$, $P = 1.000$	-	$r = 0.932$, $P = .000$	$r = 0.935$, $P = .000$
Δ Testicles	$r = -0.018$, $P = .903$	$r = 0.203$, $P = .157$	$r = 0.173$, $P = .231$	$r = -0.166$, $P = .249$	$r = -0.088$, $P = .543$	$r = -0.216$, $P = .132$	$r = 0.921$, $P = .000$	$r = 0.932$, $P = .000$	-	$r = 0.998$, $P = .000$
% Δ Testicles	$r = -0.168$, $P = .242$	$r = -0.264$, $P = .064$	$r = -0.085$, $P = .559$	$r = 0.214$, $P = .136$	$r = -0.216$, $P = .132$	$r = -0.744$, $P = .000$	$r = 0.919$, $P = .000$	$r = 0.935$, $P = .000$	$r = 0.998$, $P = .000$	-

Table 3. Regression analysis of temperature changes predicting testicular temperature variations.

Variable	Coefficient	Std. error	*t*-value	*P*-value
const	−0.106	0.092	−1.153	0.258
Δ Abdomen	0.255	0.133	1.916	0.065
Δ Right thigh	0.134	0.204	0.659	0.515
Δ Left thigh	0.112	0.179	0.625	0.537
Δ Glans	0.513	0.053	9.706	0.0

significant ($P > .05$), though abdominal temperature showed a trend toward significance ($P = .065$).

Table 4 presents the results of an independent-samples *t*-test comparing post-treatment thermal changes in subjects with initially lower abdominal temperatures (group 1) versus those with higher initial temperatures (group 2). Descriptive statistics (mean ± SD) are also included for both groups.

Figure 2 shows boxplots of temperature distributions pre- and post-treatment, revealing significant increases, especially in the glans and testicles. Moderate rises were observed in the abdomen and thighs, indicating a broad thermal response. Stable interquartile ranges suggest consistent variability, with some outliers reflecting individual differences, supporting the treatment's effectiveness in modifying regional skin temperature.

Table 5 presents the number and percentage of participants who exhibited clinically significant temperature changes (≥1 °C) in each anatomical region. This helps assess the practical relevance of the observed thermal changes.

Principal component analysis (PCA) identified 2 main components explaining most thermal variations post-treatment: PC1 (35.84%) linked to glans and abdomen temperature changes and PC2 (26.07%) associated with the thighs (Figure 3). The glans and testicles showed the highest loadings, indicating their dominant role in the thermal response, while the abdomen and thighs contributed moderately.

Discussion

This study examined the impact of a single functional neurology intervention on genital thermoregulation and sexual function in men with PE. The results confirmed the hypothesis, showing significant increases in genital temperature, particularly in the glans and testicles, indicating enhanced blood flow and autonomic modulation. Participants also reported improved ejaculatory control, supporting functional neurology as a promising non-invasive alternative for PE management.

Table 4. Abdominal temperatures groups comparison analysis with descriptive statistics.

Region	Group 1 Mean ± SD	Group 2 Mean ± SD	*t*-statistic	*P*-value
Abdomen (°C)	32.51 ± 1.84	34.79 ± 0.98	−4.429	$P < .001$
Right thigh (°c)	31.66 ± 1.88	34.46 ± 0.88	−5.460	$P < .001$
Left thigh (°C)	31.76 ± 2.08	34.42 ± 1.07	−4.629	$P < .001$
Glans (°C)	31.49 ± 1.91	34.22 ± 1.42	−4.720	$P < .001$
Testicles (°C)	32.07 ± 2.02	34.70 ± 1.14	−4.614	$P < .001$

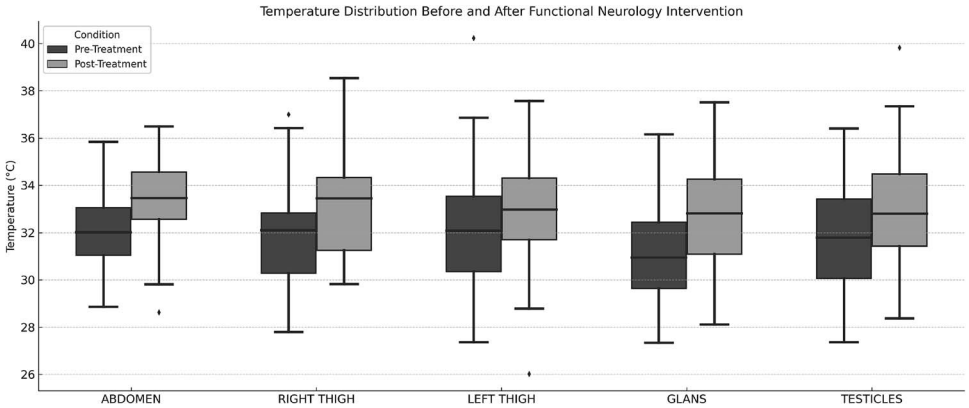

Figure 2. Boxplots of temperature distributions before and after treatment across anatomical regions. The horizontal line inside each box represents the median; boxes represent the interquartile range (IQR), and whiskers indicate minimum and maximum values excluding outliers. A significant increase was observed in all regions, particularly in the glans and testicles ($P < .001$).

Table 5. Clinical significance analysis.

Region	Participants ≥1 °C	Percentage (%)
Abdomen	17	48.57
Right thigh	23	65.71
Left thigh	17	48.57
Glans	21	60.00
Testicles	21	60.00

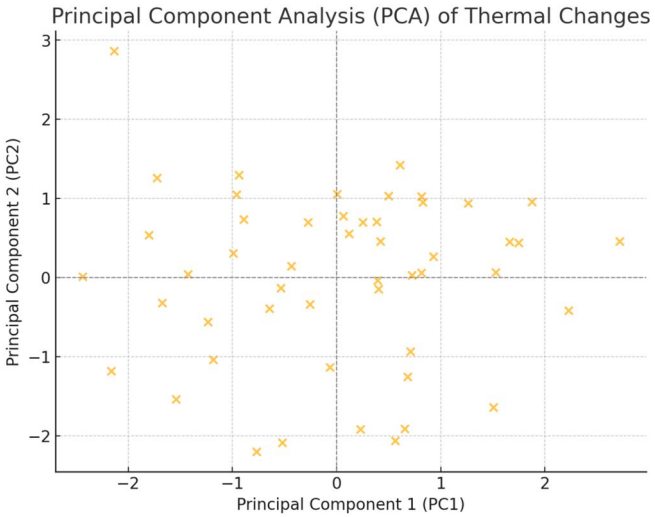

Figure 3. Principal component analysis (PCA) of thermal changes.

The observed thermal changes align with previous studies that have demonstrated the influence of neurological interventions on vascular regulation. Functional neurology techniques, such as nociceptor and mechanoreceptor stimulation, have been shown to modulate autonomic responses and improve peripheral circulation by enhancing neural communication pathways involved in vascular control.[17] The increase in genital temperature observed in this study supports the hypothesis that functional neurology interventions can enhance blood flow to the penile region, a key factor in maintaining ejaculatory control and erectile function.[21] Thermography has been widely used in clinical and sports science research as a non-invasive method for assessing changes in blood flow, inflammation, and autonomic nervous system activity. In the context of sexual health, previous studies have suggested that variations in scrotal and penile thermoregulation can serve as indicators of vascular and neurological function, providing valuable insights into conditions such as erectile dysfunction and PE.[20] The findings of the present study further reinforce the potential of thermography as a reliable tool for evaluating the physiological effects of functional neurology interventions.

We found significant increases in genital temperature following a single functional neurology intervention, suggesting an improvement in microvascular circulation and autonomic nervous system regulation. These findings align with prior studies indicating that thermographic analysis can objectively measure physiological changes associated with neuromodulation and circulatory adaptations.[22] The increase in scrotal and penile temperature observed in this study likely reflects an enhancement in endothelial function and nitric oxide–mediated vasodilation, which are crucial for ejaculatory control and sexual function. Studies examining thermographic responses have shown that neuromuscular and neurovascular interventions can influence temperature regulation through shifts in sympathetic and parasympathetic activity.[26] Thermography has been used to analyze autonomic balance in response to exercise and neuromodulatory treatments, with

findings suggesting that increased skin temperature correlates with improved parasympathetic dominance and vascular function.[27] These observations support the hypothesis that functional neurology may promote autonomic balance, contributing to better ejaculatory control through enhanced vascular responses.

Moreover, thermographic imaging is widely used in rehabilitation to assess circulatory and inflammatory responses to neuromodulation. Neuromuscular therapy can increase localized temperature, indicating enhanced perfusion.[25] In sexual health, increased genital temperature post-treatment suggests improved microcirculation and reduced sympathetic overactivity, linked to PE.[26] This study supports thermography's role in monitoring treatment efficacy. Infrared thermography also evaluates autonomic and neuromuscular adaptations in chronic pain and cardiovascular rehabilitation, where temperature changes reflect autonomic modulation.[27] The sustained genital temperature increase post-intervention suggests lasting autonomic and vascular effects, potentially improving ejaculatory control and sexual function. The observed increase in genital temperature post-intervention was considered physiologically relevant based on the ≥ 1 °C criterion, which has been previously proposed as a minimal significant change in thermographic studies involving sympathetic vasomotor responses. Although no universal standard exists, values above this threshold are commonly interpreted as reflecting enhanced vasodilation or improved microcirculatory perfusion, both of which may contribute to the sexual function improvements observed.

The correlation and regression analyses revealed key interactions between regional thermographic changes, particularly in testicular thermoregulation and autonomic function. A moderate positive correlation between abdominal and left thigh temperature changes suggests coordinated peripheral blood flow regulation.[28] Conversely, the inverse correlation between testicular and abdominal temperature changes may reflect a compensatory mechanism to prevent excessive testicular warming, which is critical for spermatogenesis.[29] Regression analysis identified glans temperature change as the strongest predictor of testicular temperature variations, reinforcing the close vascular connection between these regions.[30] These findings suggest that neuromodulatory interventions affecting penile blood flow may influence scrotal thermoregulation. However, since hormonal parameters and spermatogenic function were not evaluated in this study, any potential implications for testosterone levels or reproductive outcomes remain hypothetical and should be explored in future research.[31]

Participants with lower initial abdominal temperatures showed greater post-intervention increases, especially in the glans and testicles, suggesting a stronger vasodilatory response due to baseline thermoregulation differences. This aligns with research indicating that individuals with lower peripheral blood flow exhibit greater responsiveness to neuromodulatory interventions.[31] Clinical significance analysis confirmed that most participants experienced genital temperature increases above 1 °C, reinforcing the physiological relevance of the treatment. Principal component analysis highlighted that the glans and testicles contributed most to thermal variation, suggesting a targeted vascular response rather than a generalized temperature increase. The strong correlation between glans and testicular temperature changes indicates a shared autonomic mechanism regulating genital blood flow.[30]

No adverse events were reported during or after the intervention. The thermographic increases observed post-treatment remained within physiological temperature ranges reported in previous literature on genital thermoregulation. Although transient increases in scrotal temperature were recorded, the magnitude and duration of these changes are unlikely to negatively impact spermatogenesis or reproductive function, particularly following a single, brief intervention. Nevertheless, future studies should evaluate reproductive biomarkers and long-term outcomes to confirm the safety of repeated sessions.

Although the findings suggest a beneficial effect of the intervention, it remains uncertain whether these outcomes are attributable solely to the neuromodulatory mechanisms proposed or are partially influenced by placebo-related factors. This underscores the need for future randomized controlled studies including blinding and sham procedures.

Limitations of the study and future research lines

This study has several limitations, including a small sample size that may affect generalizability, reliance on thermography without direct neural or biochemical assessments, and a short-term follow-up lacking long-term efficacy data. Future research should include larger, more diverse populations, integrate complementary methodologies such as heart rate variability and neuroimaging, and assess long-term effects and optimal treatment frequency. Further investigation is needed to clarify the relationship between genital thermoregulation and ejaculatory function, including hormonal and vascular mechanisms. Additionally, the absence of a control group highlights the need for randomized controlled trials to confirm the specific efficacy of functional neurology interventions.

A key limitation of the present study is the absence of a placebo or sham-controlled group. The magnitude of the observed improvements, particularly in IELT, may have been partially influenced by expectancy effects or heightened partner attention. These factors are especially relevant in the context of sexual function, where cognitive and emotional variables can modulate physiological responses. Future trials should incorporate control arms to isolate the specific efficacy of the intervention from non-specific therapeutic effects.

Conclusion

This study demonstrated that a single functional neurology intervention effectively improved ejaculatory control in men with PE. The treatment led to a significant increase in the time to ejaculation, with sustained benefits observed 1 month after the intervention. These findings suggest that functional neurology enhances autonomic regulation and genital vascular function, providing a promising non-invasive approach for managing this condition. Further research is needed to confirm its long-term efficacy and optimize its clinical application.

Other statements

This manuscript has not been published nor is under consideration elsewhere. All authors have approved the final version of the manuscript and agree with its submission.

Preprints/Presentations

A preprint of this work has not been posted. This work has not been previously presented at any conference.

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Author contributions

V.J.C.-S.: Conceptualization, Methodology, Supervision, Writing—original draft. J.R.-M.: Investigation, Formal analysis, Writing—review & editing. G.E.-C.: Data curation, Software, Visualization. N.V.M.: Participant recruitment, Administration. J.F.-L.: Statistical analysis, Interpretation, Review.

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Conflicts of interest

None declared.

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