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Verbal and nonverbal behavior of swimming coaches and the effect on athletes' perceived performance

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Abstract

Aim. The aim of the research is to explore the effect of verbal and nonverbal communication of swimming coaches on athletes' perception of their own immediate evolution. The correlation between swimmers' performance (expressed by the FINA score) and athletes' perception regarding their own immediate performance following verbal and nonverbal behavior of coaches was, also, examined.
Material and method. Forty-six competitive swimmers, aged between 14 and 31 years old, (32 males and 14 females) took part in the study. A 12 items opinion questionnaire (created by the authors) was used to investigate the immediate effects (on athletes) of coaches' verbal and nonverbal behavior (nonverbal positive and nonverbal negative feedback, verbal positive and verbal negative feedback from coaches).
Results. Pearson correlation revealed significant positive links between swimmers' performances (FINA score) and their perception regarding their own immediate evolution following verbal and nonverbal feedback from coaches. Swimmers with higher FINA scores feel that positive verbal and nonverbal feedback from coaches helps them more, compared to athletes with a lower FINA score. Next, using the independent samples t-test, gender-related and age-related differences were examined, in terms of swimmers' perception of their own immediate evolution/performance following coaches' communication style.
Conclusions. Female athletes and seniors (regardless of gender) reported that their immediate performance will be more affected by both verbal and nonverbal negative feedback from coaches. Moreover, seniors feel greater receptivity to positive feedback, especially verbal (compared to juniors).

Keywords: *nonverbal communication; verbal behavior; swimming; coaches; FINA score.*

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Introduction

Competitive swimming is one of the most popular sport in the world, longevity in this sport and sports performance being determined (as in other branches) by the quality of the training process and by the coach-athlete interaction (Vasile, 2014). Effective communication is paramount in sports coaching, serving as a cornerstone for athlete development and motivation, reducing aggressive behaviors (Choi et al., 2019). This necessitates a sophisticated understanding of how communication functions within the athletic context, particularly given the challenges coaches face in effectively conveying complex information (Borggrefe & Cachay, 2013). It involves not only the clear and accurate transmission of ideas and feelings but also the ability to persuade, assess, inform, and inspire athletes to optimize their performance (Sociawan et al., 2023). Research consistently highlights open and honest communication as a vital element in fostering trust and facilitating information exchange between coaches and athletes, directly influencing the quality of their relationship and subsequent interpersonal and intrapersonal outcomes (Davis et al., 2019). Specifically, coaches employ various communicative acts, including instructional, emotional, verbal, and non-verbal exchanges, to optimize the learning process and promote positive athlete development (Agustí et al., 2020).

Through communication, specialists convey the necessary information to athletes, such as standards, objectives, but also emotions and feelings. Verbal and nonverbal behavior of coaches may positively or negatively influence athlete's self-confidence and self-efficacy (Kim & Park, 2020). In this context, it is necessary for coaches to know how and when to interact with athletes they train. Among the recommendations for coaches, when working with athletes, in terms of communication, the following stand out (Predoiu, 2016): messages must be conveyed in accordance with the athletes' degree of training and level of understanding, while also using adjacent methods for understanding technical procedures; the coach should be impartial, objective, applying the same assessment criteria to everyone; verbal messages should be clear, direct, without providing too much or too little information, but only what is important for the temporal and spatial context. The COMPASS model (see Rhind & Jowett, 2012) brings together the communication strategies that coaches and athletes can use to maintain a positive relationship. This model (COMPASS) refers to: a) Conflict management – reflects the efforts of coaches and athletes to identify, discuss, resolve, and monitor potential areas of disagreement; b) Openness – includes efforts to communicate openly and clearly; c) Motivation – emphasizes the efforts of the coach and athlete to develop a partnership that is satisfying to both parties and provides each member with reasons to remain in the relationship, based on motivation to achieve, work ethic, standards and goals; d) Positivity – emphasizes efforts to adapt the behaviors according to circumstances and to manifest understanding in various life situations; e) Advice – consists of rewarding, constructive feedback, and awareness of the impact (on performance) of positive or negative feedback; f) Support – is reflected in the fact that coaches and athletes help each other in difficult and challenging times (not only when things are going well); g) Social networks – refer to socializing with athletes and reflect communication strategies that create opportunities to develop strong relationships with other significant people (e.g., parents, friends, sport manager).

In swimming, coach-athlete communication patterns were examined. It seems that swimming coaches "provided both feedback (40.7%) and feedforward (59.3%) […] and used non-verbal messages more often (63%) than verbal messages" (Ostrowska-Karpisz & Siekańska, 2019). Also, the effect of immediate verbal feedback on modifications of stroke length was investigated, an increase in swimming velocity being observed (Zatoń & Szczepan, 2014). Not least, modern communication means to improve performance are particularly important in swimming (e.g. H-902 Waterproof Bone Conduction System), allowing coaches to give real-time verbal feedback to swimmers during training (Rădulescu et al., 2018).

Effective communication, characterized by clarity and mutual understanding, is posited as a critical determinant in shaping an athlete's belief in their capacity to succeed in sport-specific tasks (Kassing & Infante, 1999). This connection is further supported by observations that effective coaching dialogue not only improves technical skills but also fosters athlete confidence, self-regulation and overall performance (Sociawan et al., 2023). Coach leadership behavior (which includes verbal and nonverbal communication) influences athlete performance, with psychological fatigue acting as a mediator (Liu et al., 2025). While the coach–athlete dynamic is pivotal, the influence of other interpersonal relationships, such as those with parents and guardians, also significantly contributes to an athlete's self-efficacy and overall developmental trajectory (Erdner & Wright, 2017). Indeed, the athlete-coach relationship stands as a cornerstone for self-efficacy development, with coaches inspiring positive self-talk and modeling self-confidence to bolster athletes' beliefs in their capabilities (Corrado et al., 2023).

Specialists have a direct impact on athletes, among the effects of inappropriate verbal and nonverbal communication by coaches include (Pedersen, 2017): less satisfaction felt by athletes in their activities, anxiety, depression, and other possible mental health problems, decreased self-efficacy, avoidance behaviors – swimmers (for example) may begin to avoid training or competitions to avoid unpleasant emotional states. Also, coach-

athlete relationship can negatively and directly influence athletes' burnout (Jiahao & Jing, 2024). Understanding the nuances of nonverbal and verbal communication is, therefore, crucial for optimizing coaching strategies and fostering a supportive athletic environment (Robot, 2024). Nonverbal communication, encompassing gestures, eye contact, body movements, and facial expressions, often conveys more emotional meaning than verbal exchanges (Pop & Zamfir, 2019). Establishing visual contact with the athlete "plays a decisive role in regulating, facilitating and optimizing communication, in supporting the verbally transmitted information" (Pânişoară et al., 2019). Despite its pervasive influence on athletic motivation, confidence, and efficacy, nonverbal behavior has received comparatively less scholarly attention than verbal communication in the sport psychology literature (Kleef et al., 2019), especially for swimmers. Different authors highlight the critical role of nonverbal cues in shaping athlete performance and satisfaction: consistent eye contact and facial expressions enhance clarity, connection and transmit emotional states (e.g. in tennis double teams "most communications were emotional" – Lausic et al., 2009), coaches' open posture, affirmative gestures and body movement (*kinesics*, see Sullivan & Feltz, 2003) build trust and motivation, while Watzlawick's aphorism "one cannot not communicate" emphasizes the constant presence of nonverbal signals in sports, and not only (Furley & Schweizer, 2020).

The current study

The purpose of the study is to investigate the effect of verbal and nonverbal communication of swimming coaches on athletes' perception of their own immediate evolution. Also, the link between swimmers' sports performance (expressed by the FINA score) and athletes' perception regarding their own immediate performance following verbal and nonverbal behavior of coaches was examined.

Hypotheses

H1: There is a significant correlation between athletes' performance (FINA score) and their perception regarding their own immediate evolution following verbal and nonverbal feedback from coaches.

H2: There are significant differences between female and male swimmers in terms of their perception of their immediate evolution, following coaches' communication style.

H3: There are significant differences between junior and senior swimmers regarding their perception of their immediate evolution/performance, following verbal and nonverbal behavior of coaches.

Materials and method

Participants

The study involved 46 competitive swimmers (32 males and 14 females), aged between 14 and 31 years old (M_{age} = 17.4 years), of which: 33 juniors (14-17 years old) and 13 seniors (over 18 years old), legitimated at different sports clubs in Bucharest, Romania. Athletes have minimum 4 years of competitive experience (inclusion criteria). Most swimmers have national (first places in Romania) and regional/local sports results, while approximately 17% achieved international-level performances.

The convenience sampling technique was used as the main sampling technique in the current study, but, also, the snowball sampling was used.

Instruments

The CAN (Communication of Swimming Coaches with Athletes) opinion questionnaire, created by us, was used. Instructions: "Please mark on a scale from 1 to 10 the answer that applies to you, as an athlete, regarding the immediate psychological impact (on you) of the coach's verbal and nonverbal communication during the last training sessions before an important competition. Please note that 1 means *Not at all*, and 10 means *Very much* (5 means *Moderately*)."

The questionnaire has 12 items, six for each part: NON-VERBAL communication of swimming coaches, respectively VERBAL communication of swimming coaches.

The items used to investigate the immediate effects (on athletes) of coaches' nonverbal communication (nonverbal positive feedback – NPF or nonverbal negative feedback – NNF) are: 1) "To what extent did you feel that it helped your immediate performance when the coach frowned at you?" (NNF, reverse scoring); 2) "To what extent did you feel that it helped your performance when the coach smiled at you (cheerful facial expression)?" - NPF; 3) "To what extent did you feel that your immediate performance would be affected when the coach shook his head or waved his hands disapprovingly?" - NNF; 4) "To what extent did you feel that you would perform better when the coach applauded you?" - NPF; 5) "To what extent did you feel that your immediate performance would be affected when the coach turned his back on you?" - NNF; 6) "To what extent did you feel that it helped your immediate performance when the coach looked at you and encouraged you with gestures?"- NPF.

The items used to investigate the immediate effects (on athletes) of coaches' verbal communication (verbal positive feedback – VPF or verbal negative feedback – VNF) are: 1) "To what extent did you feel that verbal encouragement from your coach helped you improve your immediate performance?" - VPF; 2) "To what extent did

you feel that discouragement/negative verbal feedback from your coach affected your immediate performance?" - VNF; 3) "To what extent did praise from your coach helped you perform better?" - VPF; 4) "To what extent did you feel that your immediate performance would be affected when your coach verbally criticized you?" - VNF; 5) "To what extent did you feel that your immediate evolution/performance will be affected when your coach threatened you directly? for example: *If you don't win, you may not be able to go to the next competition/ I may not train you anymore!*" - VNF; 6) "To what extent did you feel that you will improve your immediate performance after your coach told you that you would become a great champion?" - VPF.

Four results are obtained, for NPF (nonverbal positive feedback), NNF (nonverbal negative feedback), VPF (verbal positive feedback) and VNF (verbal negative feedback), from the sum of athletes' responses at the corresponding items (3 items per each verbal and nonverbal component). In the case of negative verbal and nonverbal feedback (NNF and VNF) a higher score means that athletes feel their immediate evolution/performance will be affected following coaches' communication style. Regarding positive verbal and nonverbal feedback (NPF and VPF) a higher score means that athletes feel their immediate evolution/performance will increase, following coaches' verbal and nonverbal behavior.

It is well known that performance is idiosyncratic, with emotional states and optimal intensity varying from one athlete to another (the "ideal" affective state is highly individualized), researchers discussing Individual Zone of Optimal Functioning (IZOF) model (Hanin, 2000), each athlete having a unique zone in which they perform at their best (Bertollo et al., 2016; Predoiu et al., 2025). Therefore, no internal consistency (e.g. Cronbach's alpha) is calculated and reported in the present study, as CAN is not a questionnaire that measures a psychological construct, but a questionnaire that investigates athletes' perception (experienced subjectively-internally) of their own immediate performance following coaches' positive and negative feedback.

With respect to swimmers' sports performance FINA point scoring system was used (see World Aquatics Point Scoring, 2025), standardizing performance between types of swimming events (e.g., freestyle, breaststroke, butterfly, backstroke) and gender. Therefore, swimmers' performances can be compared across different events, strokes, and distances (short course, long course, etc.). Athletes who score 1000 points or more (FINA score) are world-class swimmers, while fewer points mean lower sports results.

Procedure

The research was conducted between December 2024 and May 2025. The questionnaire was administered online *via* Google Forms (Google LLC, Mountain View, CA, United States). Ethical principles in research were ensured (Predoiu, 2020): informed written consent was obtained (in the case of minor athletes, from their parents/legal representative), athletes could withdraw from the study at any time, and data was treated confidentially, ensuring the anonymity of participants.

Results

First, Pearson correlation was used to verify if there is a significant link between swimmers' performance (FINA score) and their perception regarding their own immediate evolution following verbal and nonverbal feedback from coaches (Table I).

Table I. Correlation matrix – FINA score and the impact of verbal and nonverbal feedback provided by coaches

		FINA score	NNF	NPF	VPF
NNF	Pearson's r	0.014	—		
	p	0.929	—		
	95% CI superior	0.303	—		
	95% CI inferior	-0.278	—		
NPF	Pearson's r	0.346	0.075	—	
	p	0.018	0.619	—	
	95% CI superior	0.578	0.358	—	
	95% CI inferior	0.062	-0.220	—	
VPF	Pearson's r	0.409	0.040	0.534	—
	p	0.005	0.792	<.001	—
	95% CI superior	0.625	0.326	0.714	—
	95% CI inferior	0.134	-0.253	0.289	—
VNF	Pearson's r	0.087	0.429	0.154	0.066
	p	0.564	0.003	0.307	0.663

95% CI superior	0.368	0.640	0.425	0.350
95% CI inferior	-0.208	0.159	-0.143	-0.229

Note. CI: Confidence interval; NNF: nonverbal negative feedback; NPF: nonverbal positive feedback; VPF: verbal positive feedback; VNF: verbal negative feedback.

In Table I a significant positive correlation is highlighted (p = 0.018, r = 0.346) between athletes' performance (FINA score) and their perception of their own immediate evolution following positive nonverbal feedback (NPF) from coaches. In other words, swimmers with superior sports performances feel that positive nonverbal feedback from coaches helps them more (coaches look at athletes, applaud, smile, encourage them with gestures), compared to athletes with a lower FINA score (they feel less helped by coaches when specialists provide positive nonverbal feedback). The effect size is $r^2 = 0.11$, showing a low/weak relationship between variables.

Also, a significant positive correlation was found (p = 0.005, r = 0.409) between swimmers' performance (FINA score) and their perception of their own immediate evolution following positive verbal feedback (VPF) from coaches. Swimmers with superior athletic results feel that positive verbal feedback from coaches helps them more (coaches praise them, encourage them verbally, conveying confidence in their ability to perform), compared to athletes with a lower FINA score (they feel less helped by coaches when specialists offer positive verbal feedback). The effect size index (coefficient of determination) shows a moderate to low relation between variables ($r^2 = 0.17$).

Table II presents the results at descriptive level.

Table II. Descriptive statistics – FINA score and athletes' perceived impact of verbal and nonverbal feedback by coaches

	FINA score	NNF	NPF	VPF	VNF
N	46	46	46	46	46
Mean (*M*)	596	15.9	26.7	24.8	19.5
Median	618	16.0	28.0	26.0	20.0
Std. deviation	139	5.18	4.40	4.90	7.07
Skewness	-0.836	-0.148	-1.17	-0.559	-0.428
Kurtosis	0.265	0.0782	2.00	-0.915	-0.634

Note. NNF: nonverbal negative feedback; NPF: nonverbal positive feedback; VPF: verbal positive feedback; VNF: verbal negative feedback; *M* = 15 for NNF, NPF, VPF and VNF means a moderate level, while 30 represents the maximum possible score.

In the case of the FINA score the average is 596 (*SD* = 139), ranging from 216 (minimum) to 817 (maximum), indicating an average level of performance (at group level) of investigated swimmers. Data in Table II emphasize that athletes generally feel they are affected at a slightly above average level by negative verbal and negative nonverbal feedback from coaches. Comparing the two, it appears that athletes are slightly more affected by negative verbal feedback from coaches (*M* = 19.5, *SD* = 7.07) than by negative nonverbal feedback (*M* = 15.9, *SD* = 5.18). Also, the results show that swimmers generally feel they are helped above average by positive verbal and positive nonverbal feedback provided by coaches. Comparing the two, it seems that athletes are slightly more helped by positive nonverbal feedback (*M* = 26.7, *SD* = 4.40) than by positive verbal feedback (*M* = 24.8, *SD* = 4.90) from coaches.

Next, using the t-test for independent samples, we checked whether there are gender-related differences in terms of swimmers' perception of their immediate evolution, following coaches' communication style. The condition of homogeneity of variance was met (Levene's test: p = 0.991 for NNF, p = 0.700 for NPF, p = 0.203 for VPF, while p = 0.475 for VNF).

Table III. Independent samples t-test – differences based on gender

		Statistic	df	p	Effect size	
NNF	Student's t	-0.6651	44.0	0.509	Cohen's d	-0.213
NPF	Student's t	-0.5751	44.0	0.568	Cohen's d	-0.184
VPF	Student's t	-0.0872	44.0	0.931	Cohen's d	-0.028
VNF	Student's t	-0.9363	44.0	0.354	Cohen's d	-0.300

Note. NNF: nonverbal negative feedback; NPF: nonverbal positive feedback; VPF: verbal positive feedback;

VNF: verbal negative feedback.

The results in Table III highlight no gender-related significant differences ($p > 0.05$) in terms of swimmers' perception of their immediate evolution/performance, following verbal and nonverbal feedback from coaches. The null hypothesis is accepted. However, Table IV reveals interesting nuances between athletes, depending on gender. Female athletes: feel 10% more affected by negative verbal feedback (VNF) from coaches than male athletes; are 6.62% more affected by negative nonverbal feedback (NNF) than male athletes; feel 2.93% more that positive nonverbal feedback (NPF) from coaches helps their immediate performance, compared to male athletes.

Table IV. Descriptive statistics – differences based on gender

	Gender	NNF	NPF	VPF	VNF
N	Male athletes	32	32	32	32
	Female athletes	14	14	14	14
Mean (*M*)	Male athletes	15.5	26.5	24.7	18.9
	Female athletes	16.6	27.3	24.9	21.0
Median	Male athletes	16.0	28.0	27.0	20.0
	Female athletes	16.0	30.0	25.0	20.5
SD	Male athletes	5.19	4.71	5.13	6.69
	Female athletes	5.29	3.69	4.49	7.93
Skewness	Male athletes	-0.434	-1.18	-0.575	-0.467
	Female athletes	0.529	-0.908	-0.534	-0.615
Kurtosis	Male athletes	0.0506	2.22	-0.984	-0.432
	Female athletes	-0.0184	-0.937	-0.690	-0.702

Note. NNF: nonverbal negative feedback, NPF: nonverbal positive feedback, VPF: verbal positive feedback,

VNF: verbal negative feedback; SD: Standard deviation.

Not least, using the independent samples t-test differences between junior and senior swimmers were investigated, regarding their perception of their immediate evolution following verbal and nonverbal behavior of coaches. The homogeneity of variances condition was generally met (Levene's test: $p = 0.662$ for NNF, $p = 0.286$ for NPF, $p = 0.007$ for VPF, while $p = 0.236$ for VNF). In the case of positive verbal feedback (VPF), an adjusted value of t was reported.

Table V. Independent samples t-test – differences based on age (juniors *vs.* seniors)

		Statistic	df	p	Effect size	
NNF	Student's t	-1.427	44.0	0.161	Cohen's d	-0.457
NPF	Student's t	-0.686	44.0	0.496	Cohen's d	-0.220
VPF	Student's t	-1.562	44.0	0.125	Cohen's d	-0.501
VNF	Student's t	-1.406	44.0	0.167	Cohen's d	-0.450

Note. NNF: nonverbal negative feedback; NPF: nonverbal positive feedback; VPF: verbal positive feedback;

VNF: verbal negative feedback.

Data in Table V show no significant differences ($p > 0.05$) between juniors and seniors in terms of their perception of their own immediate evolution/performance, following coaches' communication style. The null hypothesis is accepted. Nevertheless, Table VI reveals interesting nuances between junior and senior swimmers: senior athletes are more affected than junior athletes (by 13.14%) by negative nonverbal feedback from coaches (e.g., coaches turn their backs on athletes or wave their hands disapprovingly); seniors are 14.3% more affected than juniors as a result of negative verbal feedback from coaches (e.g., discouragement, verbal criticism or direct threats); senior swimmers feel 3.7% more that they are helped by positive nonverbal feedback and 8.64% more that they are helped in their immediate performance by positive verbal feedback from coaches (e.g., encouragement, praise), compared to junior athletes.

Table VI. Descriptive statistics – differences based on age (juniors *vs.* seniors)

	Gender	NNF	NPF	VPF	VNF
N	Junior athletes	33	33	33	33

	Senior athletes	13	13	13	13
Mean (*M*)	Junior athletes	15.2	26.1	24.3	18.6
	Senior athletes	17.5	27.1	26.6	21.7
Median	Junior athletes	16.0	28.0	23.0	20.0
	Senior athletes	18.5	29.0	28.0	21.5
Std. deviation	Junior athletes	5.35	4.94	5.22	7.29
	Senior athletes	4.54	3.78	3.50	6.24
Skewness	Junior athletes	-0.0210	-0.926	-0.348	-0.325
	Senior athletes	-0.242	-1.11	-1.69	-0.582
Kurtosis	Junior athletes	0.386	1.15	-1.20	-1.01
	Senior athletes	-0.882	-0.291	3.65	1.24

Note. NNF: nonverbal negative feedback; NPF: nonverbal positive feedback; VPF: verbal positive feedback;

VNF: verbal negative feedback.

Discussions

The specific manner in which coaches communicate can profoundly influence athletes' perceptions of their own abilities, their motivation levels, learning, and their overall athletic experience (Sagar & Jowett, 2012). However, the communication process between coach and athlete is circular: the athlete's behaviors, thoughts and feelings affect the coach's behaviors, and vice versa. The quality of this two-way process influences interpersonal and intrapersonal outcomes. Athletes perceived communication with coaches (verbal and nonverbal feedback by coaches) to be essential during the training process, during competition, and while dealing with psychological crises (Kim & Park, 2020) – coaches' verbal and nonverbal reactions may encourage or hinder certain behaviors, influencing athletes' confidence in their own athletic abilities. If the coach uses the right word athletes will subconsciously feel that they are in sync with their coach and will feel understood (Predoiu et al., 2019). Establishing formal or informal processes for dialogue, feedback or mediation may help prevent relational breakdown.

The results of the present study show that swimmers perceive positive feedback from coaches, both verbal and nonverbal, as having a beneficial impact on their immediate evolution/performance. Of the two forms, positive nonverbal feedback is slightly more appreciated, signaling the importance of supportive gestures from coaches. Specialized literature asserted that constructive feedback, positive approaches (e.g. using praise) generate higher ratings of athletes' self-perception (Pedersen, 2017). Also, athletes' perceived competence (across different level of competition) was significantly influenced by "the degree to which athletes perceived their coaches to be autonomy-supportive" (Amorose & Anderson-Butcher, 2007). Not least, it is worth mentioning that the most effective and frequently used efficacy-enhancing techniques were encouraging positive talk – "verbal persuasion is one of the prime determinants of efficacy" (Sullivan & Feltz, 2003), and "parent/guardian acting confident themselves" (Erdner & Wright, 2017).

When it comes to negative feedback (verbal and nonverbal), swimmers tend to be affected by it to a slightly above-average extent, with a stronger impact felt in the case of verbal negative feedback. These findings highlight the need for balanced communication from coaches, in which support and encouragement prevail, and any corrections are carefully worded so as not to negatively affect athletes' performance. Interestingly, Turman (2008) emphasized that "coach verbal immediacy emerged as the only significant predictor for athlete satisfaction", while coach nonverbal immediacy was not as important. However, Kleef et al. (2019) argued that coaches' expressions predicted athletes' subjective experiences (e.g. anger, happiness), and athletes' "inferences about the quality of their performance." The necessity for a deeper exploration into how nonverbal signals are interpreted within the athlete-coach dyad is highlighted.

The study emphasizes the existence of positive correlations between swimmers' performance (as measured by FINA scores) and their perception of their own immediate evolution following verbal and nonverbal behavior of coaches. Swimmers with superior sports performances feel that both verbal and nonverbal positive feedback from coaches helps them more (coaches look at the athletes, applaud, smile, and encourage them both verbally and through gestures), compared to athletes with a lower FINA score (they feel less helped by coaches when specialists offer positive verbal or nonverbal feedback). Investigating the gender-related differences in terms of swimmers' perception of their immediate evolution/performance following verbal and nonverbal feedback from coaches, no significant results were found. In other words, male swimmers are not significantly more (or less) affected by negative verbal and nonverbal feedback from coaches, compared to female athletes. They also do not feel that they are significantly more (or less) helped, in their immediate evolution/performance, by the positive

verbal and nonverbal feedback from coaches, compared to female athletes. However, some interesting nuances emerged depending on gender: female athletes are 10% more affected by negative verbal feedback (VNF) and 6.62% more affected by negative nonverbal feedback (NNF) from coaches (than male swimmers) and, also, feel 2.93% more that positive nonverbal feedback (NPF) from coaches helps their immediate performance, compared to male athletes. These findings suggest that coaches need to adapt their communication style to the gender characteristics of athletes in order to maximize the positive impact on their motivation and performance.

Considering the age-related differences, no significant results were highlighted. Therefore, juniors are not significantly more (or less) affected by the coaches' communication style (verbal and nonverbal, positive or negative) compared to seniors (and vice versa). At the same time, juniors do not feel that they are significantly more or less helped (in their immediate performance) by the verbal and nonverbal (positive or negative) feedback provided by coaches, compared to seniors. However, interesting nuances between junior and senior swimmers were observed, seniors showing greater sensitivity to negative feedback, both verbal and nonverbal, but also greater receptivity to positive feedback, especially verbal (compared to juniors). More exactly: senior athletes were more affected than junior athletes (by 13.14%) by negative nonverbal feedback from coaches (e.g., coaches turn their backs on athletes or wave their hands disapprovingly); seniors were 14.3% more affected than juniors as a result of negative verbal feedback from coaches (e.g., discouragement, verbal criticism or direct threats); senior swimmers felt 3.7% more that they were helped by positive nonverbal feedback and 8.64% more that they were helped in their immediate performance by positive verbal feedback from coaches (e.g., encouragement, praise), compared to junior athletes. These observations suggest that experience gained in competitive sports influences how coaches' communication is interpreted, highlighting the importance of feedback tailored to the age and experience level of swimmers in order to effectively support their development and performance.

Communication is part of holistic coaching practice, with verbal and nonverbal feedback fitting into planning, monitoring and various sporting contexts. Therefore, coaches should monitor how their behaviors (e.g., verbal and nonverbal feedback, social support, instruction) are communicated and received to mitigate fatigue and promote performance. Also, encouraging athletes' voice (questions, feedback), coaches can support better exchange and more effective relationships. As Agustí et al. (2020) asserted "it is important to develop specific training programs aimed at optimizing the coaches' communicative and socio-affective skills in order to maximize their impact in athletes' learning process."

Limitations and future directions

In the present study the impact of coaches' paraverbal communication (cadence, pitch, volume, pace, and the tone of the voice – Silberfeld, 2022) on swimmers' perceptions of their own immediate performance was not investigated. Paralinguistic features strongly affect how verbal messages are interpreted: friendly tone increases motivation, while harsh tone may trigger fear-based compliance. Therefore, elements such as tone of voice or pitch represent aspects that need to be examined in the future. Another limitation of the research is the time coaches spent giving positive or negative feedback to athletes – e.g. for how many seconds. Future studies could control time (as a possible independent variable), to create similar conditions (at least quantitatively) in relation to the verbal and nonverbal (positive and negative) feedback given by coaches.

Coaches should tailor communication mode and style, also, to a specific generation of athletes, sport culture and context, rather than using a one-size-fits-all approach. Therefore, future research should investigate, for example, only athletes belonging to Generation Y (or Millennials), or to Generation Z (which grew up in a digital age), coach-athlete relationship being "shaped by the characteristics and behaviors of a generation of athletes" (Landman et al., 2024). Last but not least, a relatively balanced number of participants in each group investigated (based on age and gender) could yield different results.

Conclusion

In summary, swimmers with superior sports results feel that positive verbal and positive nonverbal feedback from coaches helps them more (coaches praise them, applaud, smile, encourage them verbally and with gestures, conveying confidence in their ability to perform), compared to athletes with a lower FINA score (they feel less helped by coaches when specialists offer positive verbal and nonverbal feedback). With respect to positive feedback (verbal and nonverbal) provided by coaches, swimmers feel they are helped above average, with a stronger impact felt in the case of positive nonverbal feedback. Considering the negative feedback (verbal and nonverbal), athletes reported that they are affected by it to a slightly above-average extent, with a higher impact felt in the case of verbal negative behavior of swimming coaches.

Based on age and gender no significant differences were emphasized between swimmers regarding their perception of their immediate evolution/performance following verbal and nonverbal behavior of coaches.

However, small differences can be decisive in competitive sports, especially in swimming, therefore it is worth mentioning that: female athletes feel that their immediate performance will be more affected by both verbal and nonverbal negative feedback from coaches, compared to male swimmers, while seniors showed greater sensitivity to negative feedback, both verbal and nonverbal, but also greater receptivity to positive feedback, especially verbal (compared to juniors).

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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References

1. Agustí, D., Ballester, R., Juan-Blay, J., Taylor, W., & Huertas, F. (2020). The Academic Background of Youth Soccer Coaches Modulates Their Behavior During Training. *Frontiers in Psychology, 11*: 582209.
2. Amorose, A. J., & Anderson-Butcher, D. (2007). Autonomy-supportive coaching and self-determined motivation in high school and college athletes: A test of self-determination theory. *Psychology of Sport and Exercise, 8*(5), 654-670.
3. Bertollo, M., di Fronso, S., Filho, E., Conforto, S., Schmid, M., Bortoli, L., Comani, S., & Robazza, C. (2016). Proficient brain for optimal performance: The MAP model perspective. *PeerJ, 4:* e2082.
4. Borggrefe, C., & Cachay, K. (2013). Communicative challenges of coaches in an elite-level sports system. Theoretical reflections on successful coaching strategies. *European Journal for Sport and Society, 10*(1), 7-29.
5. Choi, H., Park, J.-A., & Kim, Y. (2019). Decreasing Aggression through Team Communication in Collegiate Athletes. *Sustainability, 11*(20): 5650.
6. Corrado, D. D., Sagone, E., Buscemi, A., & Coco, M. (2023). The Relationship between Anger Expression and Performance Score in Parents and Coaches: The Mediating Role of Self-Efficacy and Assertiveness. *International Journal of Environmental Research and Public Health, 20*(7): 5372.
7. Davis, L., Jowett, S., & Tafvelin, S. (2019). Communication Strategies: The Fuel for Quality Coach-Athlete Relationships and Athlete Satisfaction. *Frontiers in Psychology, 10*: 2156.
8. Erdner, S. M., & Wright, C. N. (2017). The Relationship Between Family Communication Patterns and the Self-Efficacy of Student-Athletes. *Communication & Sport, 6*(3): 368.
9. Furley, P., & Schweizer, G. (2020). Body language in sport. In G. Tenenbaum, R. C. Eklund, & N. Boiangin (Eds.), *Handbook of sport psychology: Exercise, methodologies, & special topics* (4th ed., pp. 1201–1219). John Wiley & Sons, Inc.
10. Hanin, Y. L. (2000). Individual Zones of Optimal Functioning (IZOF) Model: Emotion-performance relationship in sport. In Y. L. Hanin (Ed.), *Emotions in sport* (pp. 65–89). Human Kinetics.
11. Jiahao, L., & Jing, L. (2024). Examining the link between coach-athlete relationship and athlete burnout among college soccer players: the mediating role of training satisfaction. *Frontiers in Psychology, 15:* 1409609.
12. Kassing, J. W., & Infante, D. A. (1999). Aggressive communication in the coach-athlete relationship. *Communication Research Reports, 16*(2), 110-120.
13. Kim, Y., & Park, I. (2020). "Coach Really Knew What I Needed and Understood Me Well as a Person": Effective Communication Acts in Coach–Athlete Interactions among Korean Olympic Archers. *International Journal of Environmental Research and Public Health, 17*(9), 3101.
14. Kleef, G. A. van, Cheshin, A., Koning, L., & Wolf, S. A. (2019). Emotional games: How coaches' emotional expressions shape players' emotions, inferences, and team performance. *Psychology of Sport and Exercise, 41*, 1-11.
15. Landman, M., Grobbelaar, H., & Kraak, W. (2024). Coach perspectives on coach-athlete relationships and characteristics of Generation Z academy level rugby union players from South Africa. *Frontiers in sports and active living, 6:* 1461951.
16. Lausic, D., Tenenbaum, G., Eccles, D., Jeong, A., & Johnson, T. (2009). Intrateam communication and performance in doubles tennis. *Research Quarterly for Exercise and Sport, 80*(2), 281–290.
17. Liu, R., Wang, S., & Li, J. (2025). How coach leadership behavior influences athletes' performance: the chain-mediated role of the coach-athlete relationship and psychological fatigue. *Frontiers in Psychology, 15:* 1500867.
18. Ostrowska-Karpisz, A., & Siekańska, M. (2019). Coach-athlete communication patterns and their role in the development of children's swimming skills. *Journal of Kinesiology and Exercise Sciences, 29*(88), 9-17.
19. Pânișoară, I. O., Predoiu, A., Mitrache, G., Pânișoară, G., & Predoiu, R. (2019). Optimisation of coach-athlete communication. *Discobolul – Physical Education, Sport & Kinetotherapy Journal, 58*(4), 19-25.
20. Pedersen, P. M. (Ed.) (2017). *Routledge Handbook of Sport Communication*. Taylor & Francis.
21. Pop, C. L., & Zamfir, M. V. (2019). Nonverbal communication of young players in team sports. *Pedagogy of Physical Culture and Sports, 24*(1), 26-29.
22. Predoiu, A. (2020). *Metodologia cercetării ştiinţifice. Aplicaţii practice şi elemente de statistică neparametrică* [Scientific research methodology. Practical applications and elements of nonparametric statistics]. Discobolul.
23. Predoiu, R. (2016). *Psihologia sportului. Maximizarea performanţei sportive* [Sports psychology. Maximizing sports performance]. Polirom.
24. Predoiu, R., Bertollo, M., Piotrowski, A., Stănescu, R., Hamdi, F., Szabo, G., & Cosma, G. (2025). Psychological resilience in Olympic combat sports. *Frontiers in Psychology, 16:* 1605765.
25. Predoiu, R., Mitrache, G., Predoiu, A., Grigore, V., Mihaila, C., & Ciuntea L. (2019). Ways of improving the verbal, nonverbal and paraverbal communication with athletes. *Discobolul – Physical Education, Sport and Kinetotherapy Journal, 56*(2), 20-26.
26. Rădulescu, A., Marinescu, G., & Ticală, L. (2018). Modern Communication Means to Improve Performance for Young Swimmers. In V. Grigore, M. Stanescu, & M. Paunescu (Eds.), *Physical Education, Sport and Kinetotherapy - ICPESK 2017, vol 36. European Proceedings of Social and Behavioural Sciences* (pp. 132-139). Future Academy.

27. Rhind, D. J. A., & Jowett, S. (2012). *The COMPASS Model for Coach-Athlete Relationships*. Available online: https://ppsccoaching.wordpress.com/2012/12/23/the-compass-model-for-coach-athlete-relationships/
28. Robot, M. (2024). Discourse analysis and communication strategy of sport learning: a systematic review assisted with VOSviewer. *Retos, 61,* 430-439.
29. Sagar, S. S., & Jowett, S. (2012). Communicative Acts in Coach–Athlete Interactions: When Losing Competitions and When Making Mistakes in Training. *Western Journal of Communication, 76*(2): 148.
30. Silberfeld, C. (2022). *The Early Childhood Graduate Practitioner Competencies. A Guide for Professional Practice*. SAGE Publications.
31. Sociawan, E. A., Wibowo, R., & Ratnawati, R. (2023). Unlocking Karate Athlete Performance: The Power of Effective Coaching Communication. *Proceedings of the International Conference on Advance Research in Social and Economic Science (ICARSE 2022), Series: Advances in Social Science, Education and Humanities Research*, 468-475.
32. Sullivan, P., & Feltz, D. L. (2003). The preliminary development of the Scale for Effective Communication in Team Sports (SECTS). *Journal of Applied Social Psychology, 33*(8), 1693–171.
33. Turman, P. D. (2008). Coaches' immediacy behaviors as predictors of athletes' satisfaction and team cohesion. *Western Journal of Communication, 72*(2), 169–187.
34. Vasile, L. (2014). *Înotul și influența sa psihomotrică – Teoria și practica în sporturi de apă* [Swimming and its psychomotor influence – Theory and practice in water sports]. Bren.
35. World Aquatics Point Scoring. (2025). Available online: https://www.worldaquatics.com/swimming/points
36. Zatoń, K., & Szczepan, S. (2014). The impact of immediate verbal feedback on the improvement of swimming technique. *Journal of Human Kinetics, 41,* 143-154.