

Contextualisation of running power: a systematic review

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Abstract:

Problem Statement: Power meters have helped performance cyclists to revolutionise their training and competitions. However, running power is not obtained by a power meter, as in cycling, but is estimated through accelerometers, gyroscopes or inertial measurements units. Therefore, this relatively new concept must be correctly contextualised. *Approach:* The most widely used device is the Summit model of the Stryd Running Power Meter, but the validity, reliability and repeatability of this device must be studied extensively, both regarding the estimation of the running power and the biomechanical parameters. *Purpose:* The main purpose was to examine all articles where the Stryd device was used to analyse both running power and biomechanical parameters. *Methods:* Electronic databases were searched using key related terminology such as: Stryd, running power and biomechanical parameters. *Results:* The production of portable and low-cost equipment has led to the capacity to analyse power and biomechanical parameters in running using different devices. Nevertheless, to avoid erroneous conclusions, it is necessary to take into account considerations in the different studies such as the device used, its placement and the level of the participants under study. *Conclusions:* The Stryd device could be considered as the most recommended device to measure running power compared to other available devices. Although the Stryd system could be a valid tool for measuring temporal parameters, RunScribe seems to be a more accurate device to measure temporal parameters and step length. From a practical point of view, future studies should also assess running power in comparison to cycling power in elite triathletes, a population with a high level in both disciplines and who could provide useful data for practical applications in training and competition.

Key Words: Stryd, biomechanical parameters, reliability, validity, laboratory, outdoor

Introduction

Before analysing the concept of running power, it is important to know the general concepts such as movement dynamics. Rodríguez-Marroyo & García (2015) in their research on "Work, Power and Energy" emphasize that by analysing dynamics as a study of forces that cause movement, the two main areas of study of biomechanics are kinematics and kinetics. In kinematics, aspects related to geometry and variables dependent on the time of movement are studied, without considering how it has been produced (displacement angles, velocities and accelerations) (Blazevich, 2013). Special attention deserves kinetics since it incorporates the study of forces that cause movement, and variables derived from these such as work, power or energy (Özkaya, Nordin, Goldsheyder, & Leger, 1999). Including some authors these variables within the energetic of the movement since they are the ones more information they provide when assessing the efficiency or execution of sports gestures (Gutierrez, Rojas, & Withers, 1998). Specifically, the mechanical power (P) measured in watts (W) is the variable that indicates the rate at which work is done. It is possible to calculate the power output by multiplying the force exerted by the speed (Rodríguez-Marroyo & García, 2015), which is different from the metabolic power a subject can maintain in running as a function of VO_{2max} and anaerobic working capacity and the duration of effort until exhaustion (Di Prampero et al., 1993).

It is also important to thoroughly analyse the concept of cycling power to understand the concept of running power. In cycling, there are tools like "Bike calculator" (Austin, 2012) which allow the external load to be transformed into speed (km/h) at power (W). This can be done by taking into account different parameters, which the more they fit the specific situation of the sporting gesture, the more accuracy will provide the conversion (i.e. the weight of athlete and bike, type of rims, position, degree of inclination, wind speed, distance, temperature and elevation). To measure cycling power is possible because on a bicycle the transmission of force is made through numerous places of bicycle propulsion, so there is less chance of dissipating the force either through the pedal, bottom bracket axle, chain or hub (Rodríguez-Marroyo & García, 2015). Considering some authors (Jeukendrup & Van Diemen, 1998) to measure the power (P) in watts (W) obtained through power

meters could be the most direct indicator of exercise intensity. Similarly, Pass field, Hopker, Jobson, Friel, & Zabala (2017) suggest that the principle of power meters is valid although the power and its accuracy may vary according to the measurement conditions. For this reason, power meters have helped performance cyclists to revolution their training and competitions (Allen & Coggan, 2012).

Concerning running power, the data is not obtained by a power meter as in cycling, but is estimated by a complex calculation through different formulas (Olaya & Cejuela, 2019). This is because the human body is not a rigid solid, therefore, it is not possible to measure the running power using strain gauges (Cardona, Cejuela, & Esteve-Lanao, 2019). Alternatives to estimate the power in the sports gesture are accelerometers, gyroscopes and inertial measurements units (IMUs). Gyroscopes are devices that analyze the property of inertia, i.e. resistance to a change in angular movement, and accelerometers in linear movement (Lobo & Dias, 2007). However, it is worth to note the different advantages and disadvantages of the study of the different running parameters derived from accelerometry.

The main advantage is that, while previous methods of analysis have required well-equipped research laboratories, recently increased production of portable and low-cost equipment (Norris, Anderson, & Kenny, 2014). This allows researchers to move participants from a laboratory to a more sport-specific environment and discover information more applicable to the current practice of sport (Higginson, 2009). Scientists are discovering the potential of these devices to evaluate gait analysis without the constraints of technology in the laboratory (Lee, Sutter, Askew, & Burkett, 2010). Regarding the concept of running power, author such as Vance (2016) argue that this sport has been revolutionized because now it is possible to measure performance “directly, objectively and with precise repeatability”.

Similarly, has been claimed that the power, unlike other internal measures such as heart rate is not affected by external factors such as temperature, dehydration or caffeine (Stryd Team, 2016). However, Van Dijk & Van Megen (2017) in the book “The Secret of Running” show that this calculation does can be affected by many factors (i.e. running energy cost, weight and speed of the athlete, density, resistance factor, airspeed and slope). In this book, it is explained how is calculated the running power through the Stryd Running Power Meter (Stryd Pioneer Power Meter, Boulder, CO, USA) describing that the external mechanical power (W/kg) reported by the Stryd pioneer model is highly correlated ($r^2 = 0.96$) with metabolic cost (VO_2 in ml/kg/min). To date, energy cost during running and cycling in climbers and mountain bike riders has been compared during maximal and submaximal loads through speed (km/h) and watts (W) respectively, opening up with running power a new research paradigm for comparing the efforts of different sports (Prantsidis, Christoulas, Riganas, Vamvakoudis, & Stefanidis, 2013).

The Stryd pioneer, which uses tri-axial accelerometry, estimating forces in the horizontal, vertical and lateral directions, from a combined heart-rate/accelerometer strap worn around the chest, has been little researched (Aubry, Power, & Burr, 2018). However, the most widely used device, at least in the scientific literature, is the new version of the Stryd Running Power Meter (Stryd Summit Power Meter, Boulder, CO, USA). The Stryd summit model is a carbon fiber-reinforced foot pod attached to the shoe based on a 6-axis inertial motion sensor (3-axis gyroscope, 3-axis accelerometer) that weighs 9.1 grams.

The reliability, validity and repeatability of this Stryd summit model have already been studied both inside the laboratory (Austin, Hokanson, McGinnis, & Patrick, 2018; García-Pinillos, Latorre-Román, Roche-Seruendo, & García-Ramos, 2019; García-Pinillos, Soto-Hermoso, Latorre-Román, Párraga-Montilla, & Roche-Seruendo, 2019) and outside the laboratory (Cerezuela-Espejo et al., 2020; Navalta et al., 2019). Not only to measure the running power data, but also to analyze the biomechanical parameters (García-Pinillos, Roche-Seruendo, Marcén-Cinca, Marco-Contreras, & Latorre-Román, 2018; García-Pinillos, Latorre-Román, Soto-Hermoso, et al., 2019). Even concepts specific to power training in cycling have been researched and can now be analyzed in running, such as the Functional Threshold Power (Olaya, Ferriz, Sellés, & Cejuela, 2019).

Thus, a systematic review is needed for both researchers and coaches to be able to better utilize this novel device and take advantage of their strengths and minimize their weaknesses. The main purpose was to examine all investigations where the Stryd device is used to analyze both running power and biomechanical parameters.

Research methods

PubMed, Science Direct, Web of Knowledge and Google Scholar databases were used to identify studies which utilized Stryd foot pod device for measure power and metrics in running. Only articles where the words “running power”, “biomechanical” or “Stryd” appeared in the “title/abstract” or “all fields” were included in this review. Due to the relative novelty of this device, only articles published from 2016 to the present were included, including also the articles that analyze the pioneer model of this device.

The inclusion criteria for study selection were the literature was written in English (1), participants were trained or untrained athletes (2) and athletes performed running workout or test whilst wearing the Stryd device (3). A total of 9 articles were analyzed. The process carried out to select the articles is shown in Table 1.

Table 1. Process carried out to select the articles included in the systematic review.

Databases	Key words	Found articles	Articles included
Pubmed	Title/abstract: "running power"	22	6 included
	Title/abstract: "biomechanical" AND "Stryd"	0	0
	All fields: "running power"AND"Stryd"	6	(6 repeat articles)
Science Direct	All fields: "running power" AND "Stryd"	1	1 included
Web of Knowledge	All fields: "running power" AND "Stryd"	6	(6 repeat articles)
Scholar Google	All fields: "running power" AND "Stryd"	32	2 included

Results

The flow chart in Figure 1 shows graphically the process by which items have been included and excluded in this review. The data entries are described because in different studies the same subjects were used to measure different variables, such as running power and biomechanical parameters. A total of 216 entries were analyzed in the 9 studies included. Of the 216 entries, only 40 entries correspond to elite and well-trained athletes (32 male and 8 female) and 176 correspond to recreational athletes (158 male and 18 female).

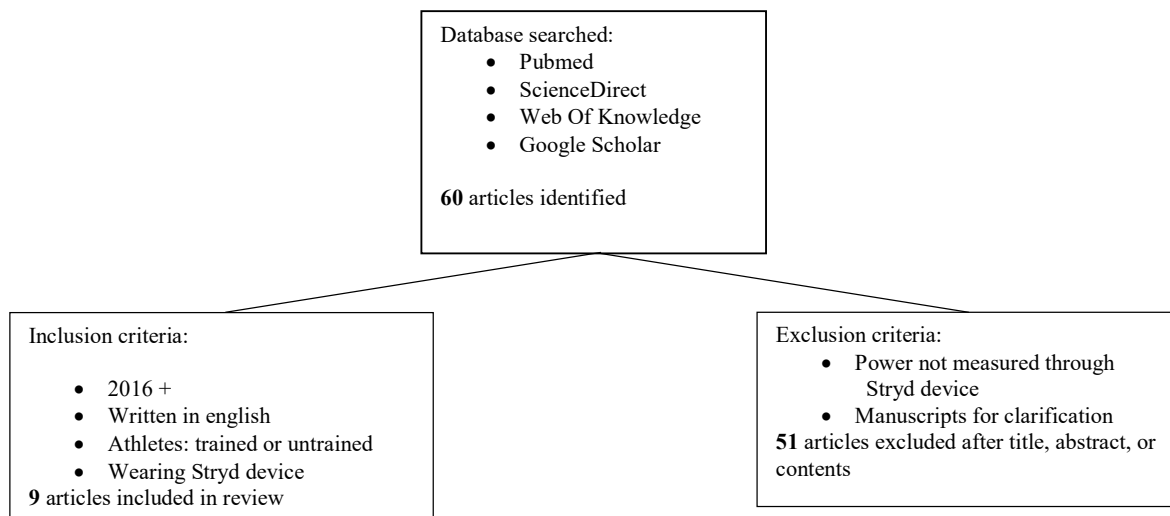


Figure 1. Flow chart of the search process, selection and inclusion of the literature review.

In all the studies included, the Stryd device was used to measure running power or biomechanical parameters. However, to be able to make correct comparisons between different studies it is important to take into account different considerations, otherwise, the investigators could reach wrong conclusions.

For example, it is important to differentiate between the Stryd pioneer (Stryd Pioneer Power Meter, Boulder, CO, USA) and the Stryd summit (Stryd Summit Power Meter, Boulder, CO, USA) because they are not the same devices.

To differentiate the level of the participants also is a key point in sports science. Similarly, a distinction must be made between investigations that do data analysis on a treadmill, outdoor conditions or both, and even if reference is made to the surface.

Finally, although most research is oriented towards the analysis of laboratory related data, some studies focus only on training and coaching-oriented concepts. All these considerations are shown in Table 2.

Table 2. Details of articles on the analysis of running power and biomechanical parameters.

	(Aubry et al., 2018)	(Navalta et al., 2019)	(Cerezuela-Espejo et al., 2020)	(García-Pinillos, Soto-Hermoso, et al., 2019)	(Austin et al., 2018)	(García-Pinillos, Latorre-Román et al., 2019)	(García-Pinillos, Latorre-Román, Soto-Hermoso et al., 2018)	(Olaya et al., 2019)
Pioneer model	√							
Summit model		√	√	√	√	√	√	√
Power output	√	√	√	√	√	√		√
Biomechanical parameters	√	√					√	
Differences between surfaces	√							
Recreational athletes	√	√		√		√	√	√
Well trained athletes	√		√		√			
Metabolic demand	√		√	√	√			
Treadmill test	√		√	√	√	√	√	
Outdoor test	√	√	√					√
Functional Threshold Power								√
Reliability		√					√	
Repeatability			√					
Concurrent validity			√				√	

The pioneer model: Assessment of running power

Table 3 summarizes the only article carried out with the Stryd pioneer model (Stryd Pioneer Power Meter, Boulder, CO, USA). It should be noted that these conclusions have also been discussed in a subsequent clarification manuscript (Snyder, Mohrman, Williamson, & Li, 2018).

Table 3. Assessment of running power through the Stryd pioneer model.

An Assessment of Running Power as a Training Metric for Elite and Recreational Runners (Aubry et al., 2018)

Purpose	Material & methods	Results	Conclusions
To investigate the Stryd Running Power Meter, and the applicability of running power (and its individually calculated run mechanics) to be a useful surrogate of metabolic demand (VO ₂), across different running surfaces, within different caliber runners	Recreational (n = 13) and elite (n = 11) runners completed a test assessing VO ₂ at 3 different paces, while wearing a Stryd Running Power Meter on both an indoor treadmill (2-min step each pace) and an outdoor track (4-min each pace), to investigate relationships between estimated running power and metabolic demand	On the one hand, a weak but significant relationship was found between running power and VO ₂ considering all participants as a homogenous group (r = 0.29). However, when assessing each population individually, no significant relationship was found. On the other hand, no significant difference in running power between the 2 surfaces (treadmill and outdoor track) was noted at any pace in either population	Firstly, run power did not accurately reflect differences in metabolic cost between the 2 surfaces. Secondly, running power, is not sufficiently accurate as a surrogate of metabolic demand, particularly in the elite population. Thirdly, in a recreational population running power could be useful for feedback on several running dynamics known to influence running economy

Running power in indoor and outdoor environments: reliability, repeatability and concurrent validity

In Table 4 are shown the results of the analysis of reliability, repeatability and concurrent validity of Stryd Running Power Meter (Stryd Summit Power Meter, Boulder, CO, USA) in indoor and outdoor environments. As discussed above, it is important to know the different advantages and limitations of the investigation of the different running parameters derived from accelerometry. The main advantage is that the data can be analyzed outside the laboratory in specific competition situations. Otherwise, the limitations refer to the fact that it is a relatively new device.

This has led researchers to analyze the reliability, repeatability and concurrent validity and related concepts such as coefficient of variation (CV), interclass correlation coefficient (ICC) and 95% confidence intervals (CI) of Stryd in indoor and outdoor environments. On the one hand, Navalta et al. (2019) analyzed the reliability of trail walking and running tasks using the Stryd. On the other hand, Cerezuela-Espejo et al. (2020) studied the repeatability and concurrent validity of five commercial technologies that provides the running power in both indoor and outdoor environments.

Table 4. Reliability, repeatability and concurrent validity of Stryd in both indoor and outdoor environments.

Reliability of Trail Walking and Running Tasks Using the Stryd Power Meter (Navalta et al., 2019)			
Purpose	Material & methods	Results	Conclusions
To provide reliability data for outdoor tasks as measured by the Stryd Power Meter	Young healthy individuals (N = 20, male n = 12, female n = 8) completed two 5-min self-paced walks along a trail, and two 5-min trail runs	Measures during trail running that returned a CV less than 10 %, met the ICC threshold of 0.70, and displayed good to excellent 95 % CI included pace, average elapsed power, average elapsed form power, average elapsed leg spring and vertical oscillation. The only variable during walking to meet these criteria was maximal power	Running tasks completed on a trail generally return more consistent measures for variables that can be obtained from the Stryd foot pod device than walking tasks

Are we ready to measure running power? Repeatability and concurrent validity of five commercial technologies (Cerezuola-Espejo et al., 2020)

Purpose	Material & methods	Results	Conclusions
To analyze the repeatability of five commercially available technologies for running power estimation, and to examine the concurrent validity through the relationship between each technology and oxygen uptake (VO ₂)	Power was simultaneously registered by the commercial technologies Stryd _{App} , Stryd _{Watch} , Run Scribe, Garmin _{RP} and Polar _V , while VO ₂ was monitored by a metabolic cart. Endurance trained male athletes (N = 12) performed on a treadmill (indoor) and an athletic track (outdoor) three submaximal running protocols with manipulations in speed, body weight and slope	The main results of this study show that Stryd device was found as the most repeatable technology for all environments and conditions (SEM≤12.5W, CV≤4.3%, ICC≥0.980) besides the best concurrent validity to the VO ₂ (r≥0.911, SEE≤7.3%)	The Stryd device can be considered as the most recommended tool, among the analyzed, for running power measurement

Running power in the laboratory

Table 5 is a summary of the articles that have investigated the relationship in power running changes with the internal load (Austin et al., 2018) and external load indicators in running (García-Pinillos, Soto-Hermoso, et al., 2019) and the new paradigms (García-Pinillos, Latorre-Román, Roche-Seruerdo, et al., 2019) that are opened with Stryd Running Power Meter (Stryd Summit Power Meter, Boulder, CO, USA).

Table 5. Relationship in power running changes with the internal load, external load and new paradigms.

How Does Power During Running Change when Measured at Different Time Intervals?
(García-Pinillos, Soto-Hermoso, et al., 2019)

Purpose	Material & methods	Results	Conclusions
To examine how the power output changes while running at a continuous comfortable velocity on a motorized treadmill by comparing running power averaged during different time intervals	Amateur endurance runners (N= 49, men n= 44, women n= 5) performed a running protocol on a treadmill at self-selected comfortable velocity examining power output over six recording intervals within the 3-min recording period: 0–10 s, 0–20 s, 0–30 s, 0–60 s, 0–120 s and 0–180 s	The ANOVAs showed no significant differences in the magnitude of the power output between the recording intervals (p = 0.276, F = 1.614, partial Eta ² = 0.155). An almost perfect association was also observed in the magnitude of the power output between the recording intervals (ICC ≥ 0.999). Bland-Altman plots revealed no heteroscedasticity of error for the power output in any of the between-intervals comparisons (r ² < 0.1), although longer recording intervals yield smaller systematic bias, random errors, and narrower limits of agreement for power output	Power data during running, as measured through the Stryd™ system, is a stable metric with negligible differences, in practical terms, between shorter and longer recording intervals. Nevertheless, if maximum accuracy is required (e. g., scientific approach), longer recording periods must be used (i. e., 2–3 min)

The Relationship between Running Power and Running Economy in Well-Trained Distance Runners
(Austin, Hokanson, McGinnis, & Patrick, 2018)

Purpose	Material & methods	Results	Conclusions
To measure the correlations between running economy and power and form power at lactate threshold pace	Well-trained distance runners (N=17, male n= 9, female n=8) completed a running protocol on a treadmill. Participants ran two four-minute trials: one with a self-selected cadence, and one with a target cadence lowered by 10%	There were positive, linear correlations between running economy and power (self-selected cadence and lower cadence, r = 0.6; the 90% confidence interval was 0.2 to 0.8); running economy and form power (self-selected cadence and lower cadence r = 0.5; the 90% confidence interval was 0.1 to 0.8)	Running economy is positively correlated with Stryd's power and form power measures yet the foot pod may not be sufficiently accurate to estimate differences in the running economy of competitive runners

Prediction of power output at different running velocities through the two-point method with the Stryd power meter (García-Pinillos, Latorre-Román, Roche-Seruendo, & García-Ramos, 2019)

Purpose	Material & methods	Results	Conclusions
To determine if the Power-Velocity relationship in endurance runners fits a linear model when running at submaximal velocities, as well as to examine the feasibility of the “two-point method” for estimating power values at different running velocities	Recreationally trained male endurance runners (N=18) performed, on a motorized treadmill, an incremental running protocol to exhaustion measuring power with Stryd™ power meter. The Power-Velocity relationship was determined from a multiple-point method (10, 12, 14, and 17km·h ⁻¹) as well as from three two-point methods based on proximal, intermediate and distal velocities	The Power-Velocity relationship was highly linear (r=0.999). The ANOVAs revealed significant, although generally trivial (effect size < 0.20), differences between measured and estimated power values at all velocities tested. Very high correlations (r=0.92) were observed between measured and estimated power values from the 4 methods, while only the multiple point method (r ² =0.091) and two-point method distal (r ² =0.092) did not show heteroscedasticity of the error	Concerning the two-point method based on distant velocities, is able to provide power output with the same accuracy than the multiple-point methods. In relationship to Stryd™ system, the authors suggest that the validity and reliability of the power data from this device is still unknown

Spatio temporal parameters

Table 6 shows the evaluation of the absolute reliability and concurrent validity of the Stryd Running Power Meter (Stryd Summit Power Meter, Boulder, CO, USA) for measuring biomechanical parameters during running in comparison with the Opto Gait system (García-Pinillos et al., 2018) and high-speed video analysis and other devices (García-Pinillos, Latorre-Román, Soto-Hermoso, et al., 2019).

Table 6. Absolute reliability and concurrent validity of Stryd system for measuring spatiotemporal parameters.

Absolute reliability and concurrent validity of the Stryd system for the assessment of running stride kinematics at different velocities (García-Pinillos, Roche-Seruendo, Marcén-Cinca, Marco-Contreras, & Latorre-Román, 2018)

Purpose	Material & methods	Results	Conclusions
To determine the absolute reliability and to evaluate the concurrent validity of the Stryd system for measuring spatiotemporal variables during running at different velocities (8–20 km·h ⁻¹) by comparing data with another widely used device (the Opto Gait system)	Recreationally trained male endurance runners (N= 18) performed an incremental running test (8–20 km·h ⁻¹ with 3-minute stages) on a treadmill. Spatiotemporal parameters (contact time, flight time, step length, and step frequency) were measured using 2 different devices (Stryd and Opto Gait systems)	The Stryd system showed a coefficient of variation (CV) <3%, except for flight time (3.7– 11.6%). The Opto Gait achieved CV <4%, except for flight time (6.0– 30.6%). Pearson correlation analysis showed large correlations for contact time and flight time, and almost perfect for step length and step frequency over the entire protocol. The ICC partially support those results. Paired t-tests showed that contact time was underestimated (p, 0.05, effect size [ES]>0.7; ~4–8%), flight time overestimated (p, 0.05, ES > 0.7; ~7–65%), whereas step length and step frequency were very similar between systems (ES <0.1, with differences <1%)	The Stryd is a practical portable device that is reliable for measuring contact time, flight time, step length and step frequency during running. It provides accurate step length and step frequency measures, but underestimates contact time (0.5–8%) and overestimates flight time (3–67%) compared with a photocell-based system

Agreement between the spatiotemporal gait parameters from two different wearable devices and high-speed video analysis (García-Pinillos, Latorre-Román, Soto-Hermoso, et al., 2019)

Purpose	Material & methods	Results	Conclusions
To evaluate the concurrent validity of two different inertial measurement units for measuring spatiotemporal parameters during running on a treadmill, by comparing data with a high-speed video analysis (VA) at 1,000 Hz	Forty-nine endurance runners performed a running protocol on a treadmill at comfortable velocity (i.e., 3.25 ± 0.36 m·s ⁻¹). Those wearable devices (i.e., Stryd™ and RunScribe™ systems) were compared to a high-speed VA, as a reference system for measuring spatiotemporal parameters (i.e. contact time, flight time, step frequency and step length) during running at comfortable velocity	The pairwise comparison revealed that the Stryd™ system underestimated contact time (5.2%, p < 0.001) and overestimated flight time (15.1%, p < 0.001) compared to the VA; whereas the Run Scribe™system underestimated contact time (2.3%, p = 0.009). No significant differences were observed in step frequency and step length between the wearable devices and VA. The ICC revealed an almost perfect association between both systems and high-speed VA (ICC > 0.81). The Bland-Altman plots revealed heteroscedasticity of error (r ² = 0.166) for the contact time from the Stryd™ system, whereas no heteroscedasticity of error (r ² < 0.1) was revealed in the rest of parameters	Both foot pods are valid tools for measuring spatiotemporal parameters during running on a treadmill at comfortable velocity. If the limits of agreement of both systems are considered in respect to high-speed VA, the RunScribe™seems to be a more accurate system for measuring temporal parameters and step length than the Stryd™system

Research oriented to coaching and training: Running Functional Threshold Power in watts (rFTP_w)

Although many studies have focused on studying the reliability and validity of Stryd Running Power Meter (Stryd Summit Power Meter, Boulder, CO, USA), from a practical point of view, coaches and athletes who use Stryd do not make an exhaustive analysis of the data. The only study that covers one of the most used concepts in training and racing with power meter until now in cycling, and currently in running, the Functional Threshold Power, it is shown in Table 7.

Table 7. Research orientated to coaching and training: running FTP_w determination.

A comparison between different tests for Functional Threshold Power determination in running (Olaya et al., 2019)			
Purpose	Material & methods	Results	Conclusions
To determinate the most suitable methodology for rFTP _w determination	Five different methodologies were carried out in recreational triathletes (N=9) to calculate rFTP _w . All tests were performed on the athletics track with a Stryd foot pod	The 3-minute – 9-minute test presented a lower average error in comparison to the mean rFTP _w value of all power (3.7 W + 8.6W) and pace (-6 s/km + 9 s/km) measurement tests	The 3-minute – 9-minute test could be the best choice regardless of the distance or duration of the competition because rFTP _w changes depending on the duration of each test. The 30-minute test could be an alternative to determine rFTP _w through the data obtained in a training session or competition of similar length

Conclusions

Should be differentiated between research using the Stryd Pioneer Running Power Meter and the Stryd Summit Running Power Meter since although they are devices of the same brand, they are different devices.

The Stryd summit model must always be placed in a correct position according to the indications of the brand, otherwise the accuracy of the data could be affected, especially in the last model because the wind detection feature of the new Stryd cannot work accurately if the device is inverted.

Concerning running power, although the validity and reliability of the power data from this device are still unknown, the Stryd device can be considered as the most recommended tool in comparison to Run Scribe, Garmin and Polar devices.

Regarding spatiotemporal parameters, although Stryd foot pod is a reliable and valid tool for measuring spatiotemporal parameters during running on a treadmill a comfortable velocity, the Run Scribe device seems to be a more accurate system for measuring temporal parameters and step length than the Stryd system.

It is suggested that future studies analyze Stryd repeatability by analyzing data from two Stryd devices in the same shoe at the same height while running.

It is recommended that future studies provide data on both power and biomechanical parameters for different levels of athletes. In the same way, from a practical point of view, future studies should also assess running power in comparison to cycling power in elite triathletes, a population with a high level in both disciplines and who could provide useful data for practical applications in training and competition.

Conflicts of interest

The authors declare that there are no conflicts of interest.

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