



**OUTPUT**

# ***NORMATIVE DATA IN JUMPS TRAINING***

Comparing Normatives from Thousands of Athletes' Personal Bests.

## ***FOREWORD***

The content of this ebook is intended to provide valuable insights and guidance to athletes, trainers, and sports enthusiasts. However, we would like to bring to your attention that certain pages within this book may contain duplicated content, presenting both metric and imperial versions of the information.

The inclusion of duplicate content is done with the intention of accommodating readers from different regions and backgrounds, as metric and imperial systems are commonly used in various parts of the world. By offering both versions, we aim to ensure that athletes can easily access and comprehend the normative data, regardless of their preferred measurement system.

While we have taken great care in presenting the normative data accurately, we strongly advise consulting with professionals, trainers, or experts within the athletic field to validate and tailor the information to your specific circumstances. The content within this ebook should not be considered a substitute for professional advice, personalized training programs, or medical guidance.

We hope that this book proves to be a valuable resource in comparing and leveraging normative data for your athletic pursuits.

By gathering normatives from thousands of Output users / athletes' personal bests, Output Sports provides comprehensive and informative tables for various strength metrics. This wealth of information assists in setting appropriate training targets, identifying areas for improvement, and ultimately optimizing athletic performance.

## ***NORMATIVE DATA: OVERVIEW***

Normative data is the statistical treasure trove of sports science. It provides valuable insights into an athlete's physical attributes and capabilities.

Normative data in sports science refers to a collection of standardized measurements and performance statistics derived from a representative sample of individuals within a specific population. This data serves as a reference point or benchmark against which an athlete's individual performance or characteristics can be evaluated and compared. By comparing an athlete's results to the normative data, we gain a deeper understanding of their strengths, weaknesses, and areas for improvement.

Imagine a coach assessing the agility of a soccer player using a series of timed tests. Without normative data, the coach might only have a standalone time measurement, providing limited context about the player's agility.

However, armed with a dataset of agility measurements from soccer players of similar age, gender, and skill level, the coach can now gauge whether the player's performance is above average, average, or below average. This information becomes invaluable when designing training routines tailored to the athlete's specific needs.



## ***PLYOMETRICS***

Plyometrics are exercises that combine explosive power and speed. They involve rapid stretching and contracting of the muscles, which can help you jump higher, run faster, and change direction more quickly.

Plyometrics work by training your muscles to produce more force in a shorter amount of time. This is done by using a stretch-shortening cycle (SSC). An SSC is when a muscle is stretched, followed by a rapid concentric contraction. The SSC is what allows you to jump high, run fast, and change direction quickly.

You can do plyometrics at any time in your workout, but they are often done at the beginning of a workout to warm up and activate the muscles. Plyometrics can also be done at the end of a workout to help improve your explosive power and speed.

If you are new to plyometrics, it is a good idea to work with a certified personal trainer to learn proper form and technique.

Here are some examples of plyometric exercises:

- Box jumps
- Depth jumps
- Broad jumps
- Med ball throws
- Tuck jumps
- Skater jumps

Tips for doing plyometrics safely:

- Always warm up before doing plyometrics.
- Do plyometrics on a soft surface, such as grass or a mat.
- Focus on proper form.
- Start with a low volume of plyometrics and gradually increase the volume as you get stronger.
- Listen to your body and stop if you feel any pain.



## ***POWER TESTING***

When we think of "power" we often think of explosive dynamic movements. In this context, what we are often actually referring to is the rate of force development in reference to our bodyweight, or our body weight relative to some external load. During absolute strength testing, we can in fact estimate power (in Watts). The most common method for measuring lower body power though (particularly in the published literature) is jump performance. Other test metrics such as flight time, ground contact time (in hop or multiple jump tests) or reactive strength index can give us useful data that can also be used to understand an athlete's power production strategy and potential.

The countermovement jump (CMJ) is the most widely used test in the literature and is one of the more standardized protocol movements to test power output. It has a much greater ability to predict power output across different studies (assuming the method for actually measuring jump height is accurate).



# RSI TESTING

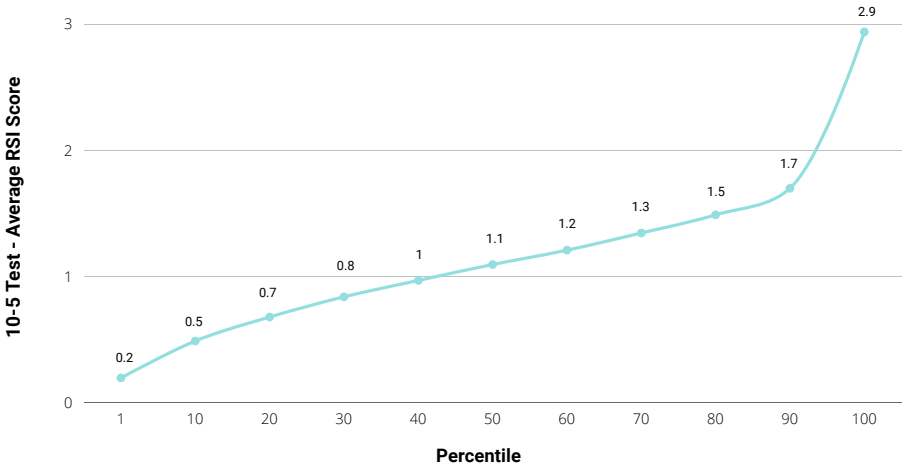
RSI, or reactive strength index, is a valuable tool in quantifying an athlete's fast stretch-shortening cycle, which is critical for explosive movements such as jumping and sprinting. By measuring an athlete's RSI, coaches and trainers can identify if the athlete has enough general fitness to perform specific fitness activities, such as high-intensity plyometric training. Additionally, RSI can be used to rank athletes in a particular sport by traits that may determine sporting success, such as the ability to generate maximal force and power. Repeated jump variations, such as the 10-5 Test, can also be used to measure the determinants of performance and target specific areas for improvement, while drop-jump variations can be used to monitor an athlete's progress over time as a response to interventions aimed at improving their reactive strength. Overall, the use of normative data in conjunction with these tests can provide valuable insights into the make-up of elite athletes and the determinants of their success.

# 10-5 TEST

RSI Score	
1st-10th Percentile	0.2 - 0.5
11th-30th Percentile	0.5 - 0.8
30th-50th Percentile	0.8 - 1.1
50th-70th Percentile	1.1 - 1.3
70th-90th Percentile	1.3 - 1.7
90th-100th Percentile	1.7 - 2.9



### 10-5 TEST - AVERAGE RSI SCORE



***COUNTERMOVEMENT JUMP HEIGHT***

Jump Height (Metric)	
1st-10th Percentile	16 - 23cm
10th-30th Percentile	23 - 30cm
30th-50th Percentile	30 - 36cm
50th-70th Percentile	36 - 41cm
70th-90th Percentile	41 - 50cm
90th-100th Percentile	50 - 96cm



***COUNTERMOVEMENT JUMP HEIGHT***

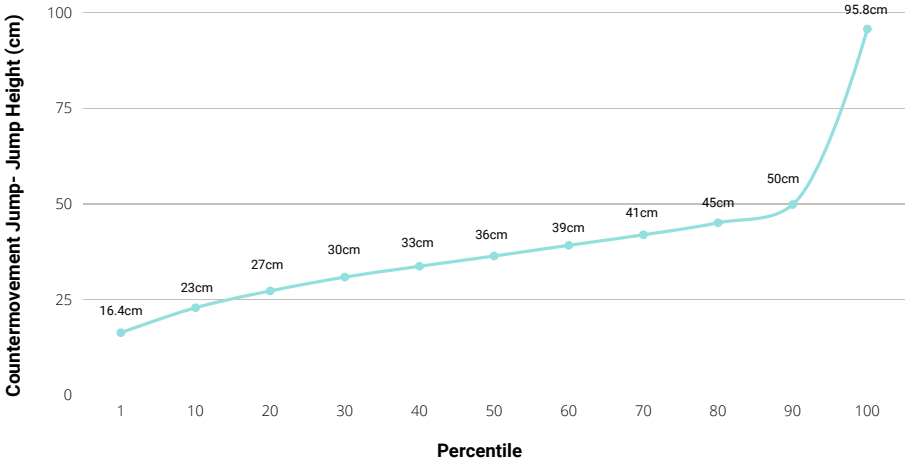
Jump Height (Imperial)	
1st-10th Percentile	6.4 - 9 in
10th-30th Percentile	9 - 12 in
30th-50th Percentile	12 - 14 in
50th-70th Percentile	14 - 17 in
70th-90th Percentile	17 - 20 in
90th-100th Percentile	20 - 37.7 in





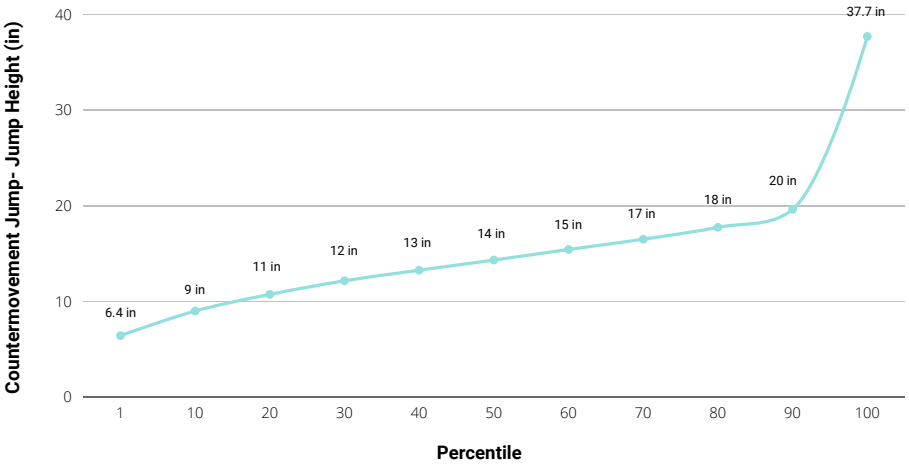
**METRIC (CM)**

**COUNTERMOVEMENT JUMP- JUMP HEIGHT**



**IMPERIAL (IN)**

**COUNTERMOVEMENT JUMP- JUMP HEIGHT**



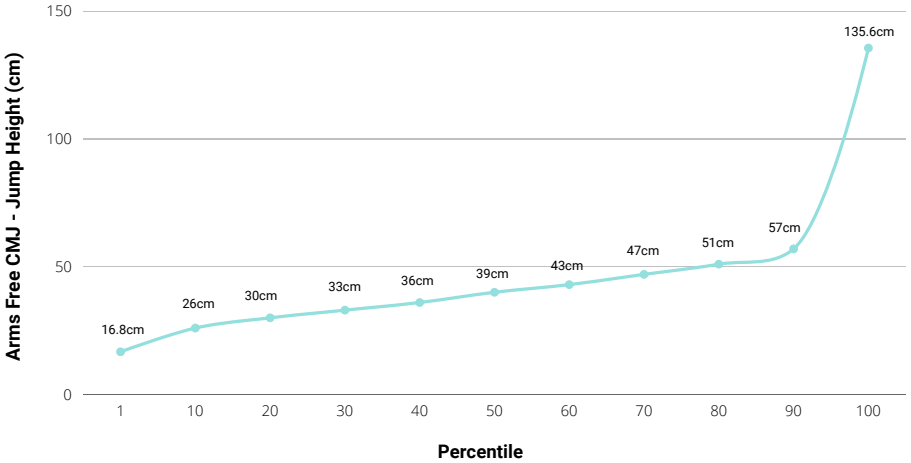
# ARMS FREE COUNTERMOVEMENT JUMP HEIGHT

Jump Height (Metric)		Jump Height (Imperial)	
1st-10th Percentile	17 - 26cm	1st-10th Percentile	6.6 - 10 in
11th-30th Percentile	26 - 33cm	10th-30th Percentile	10 - 13 in
30th-50th Percentile	33 - 40cm	30th-50th Percentile	13 - 16 in
50th-70th Percentile	40 - 47cm	50th-70th Percentile	16 - 19 in
70th-90th Percentile	47 - 57cm	70th-90th Percentile	19 - 22 in
90th-100th Percentile	57 - 136cm	90th-100th Percentile	22 - 53.4 in



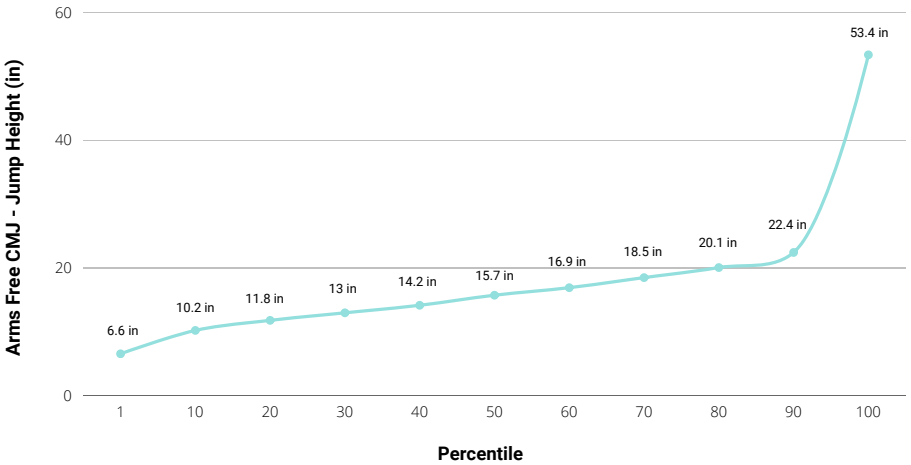
**METRIC (CM)**

**ARMS FREE CMJ - JUMP HEIGHT**



**IMPERIAL (IN)**

**ARMS FREE CMJ - JUMP HEIGHT**



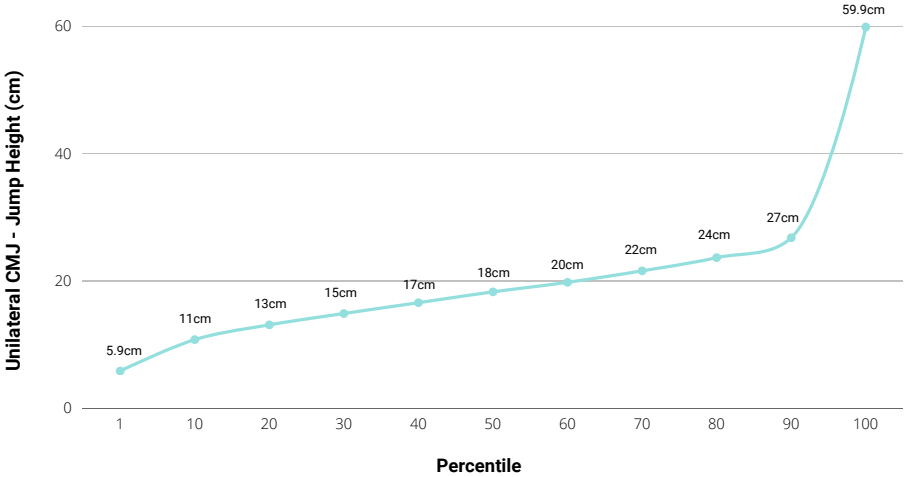
# UNILATERAL COUNTERMOVEMENT JUMP HEIGHT

Jump Height (Metric)		Jump Height (Imperial)	
1st-10th Percentile	6 - 11cm	1st-10th Percentile	2.3 - 4 in
11th-30th Percentile	11 - 15cm	10th-30th Percentile	4 - 6 in
30th-50th Percentile	15 - 18cm	30th-50th Percentile	6 - 7 in
50th-70th Percentile	19 - 22cm	50th-70th Percentile	7 - 9 in
70th-90th Percentile	22 - 27cm	70th-90th Percentile	9 - 11 in
90th-100th Percentile	27 - 60cm	90th-100th Percentile	11 - 23.6 in



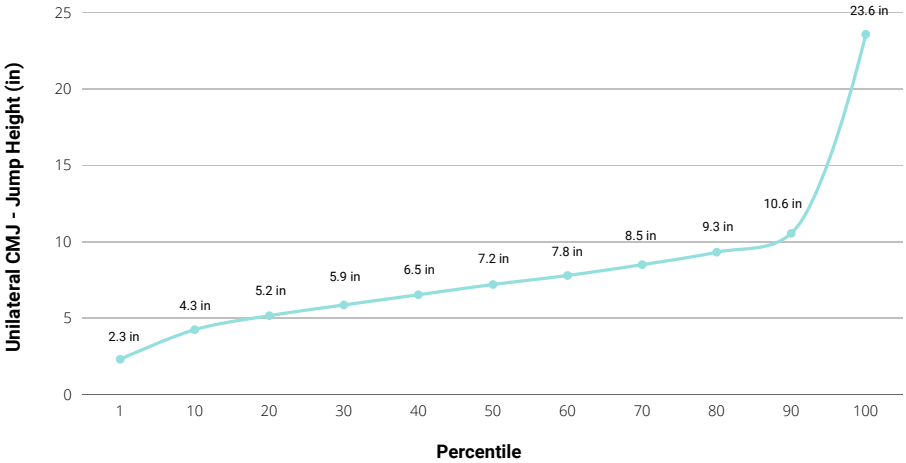
**METRIC (CM)**

**UNILATERAL CMJ - JUMP HEIGHT**



**IMPERIAL (IN)**

**UNILATERAL CMJ - JUMP HEIGHT**



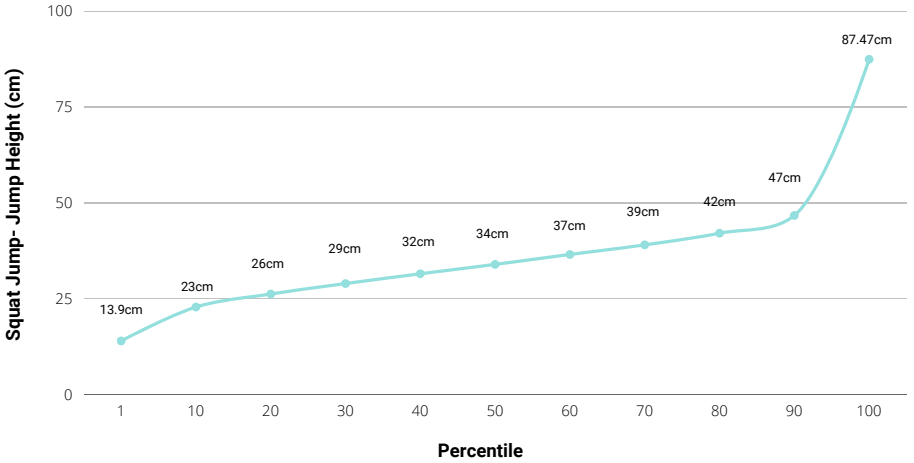
# SQUAT JUMP HEIGHT

Jump Height (Metric)		Jump Height (Imperial)	
1st-10th Percentile	13.9 - 23cm	1st-10th Percentile	5.5-9 in
11th-30th Percentile	23 - 29cm	10th-30th Percentile	9 - 11.4 in
30th-50th Percentile	29 - 34cm	30th-50th Percentile	11.4 - 13.4 in
50th-70th Percentile	34 - 39cm	50th-70th Percentile	13.4 - 15.3 in
70th-90th Percentile	39- 47cm	70th-90th Percentile	15.3 - 18.5 in
90th-100th Percentile	47 - 87.5cm	90th-100th Percentile	18.5 - 34.4 in



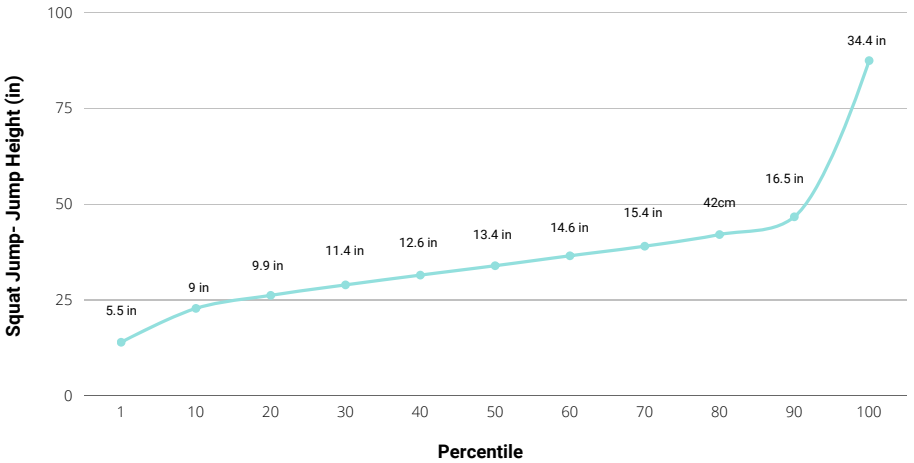
**METRIC (CM)**

**SQUAT JUMP - JUMP HEIGHT**



**IMPERIAL (IN)**

**SQUAT JUMP - JUMP HEIGHT**



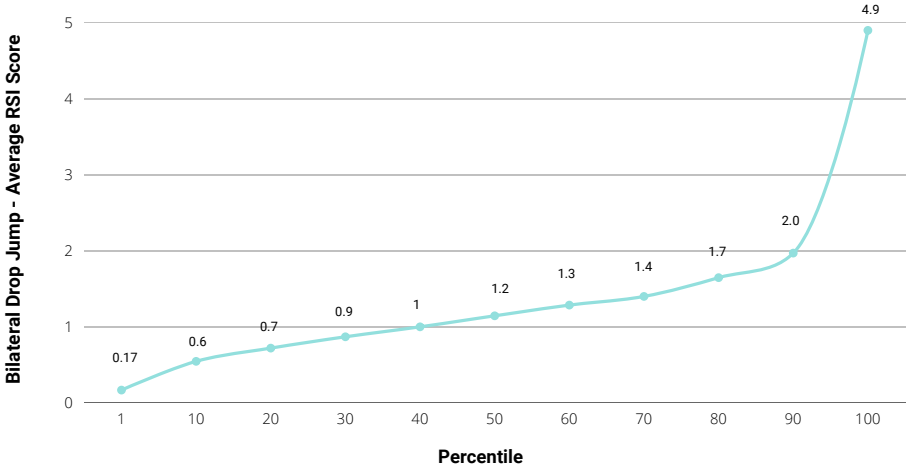
## ***BILATERAL DROP JUMP***

RSI Score	
1st-10th Percentile	0.17 - 0.6
10th-30th Percentile	0.6 - 0.9
30th-50th Percentile	0.9 - 1.2
50th-70th Percentile	1.2 - 1.4
70th-90th Percentile	1.4 - 2.0
90th-100th Percentile	2.0 - 4.9





### ***BILATERAL DROP JUMP - AVERAGE RSI SCORE***







# USING OUTPUT TO TRACK JUMPS & PLYOS

The Output Sports V2 sensor can be applied to the appropriate body part (usually the foot) to track jumps and plyometrics performance data.



Output has hundreds of measurement options for jumps and plyometrics including:

-  Countermovement Jumps
-  Squat Jumps
-  10-5 Test
-  Drop Jumps



Sensor placement will look like this:



Simply connect your sensor, select your exercise from the list in the Capture App (or your favourites) and go!



Simply connect your sensor, select your exercise from the list in the Capture App (or your favourites) and go! Output provides:

-  Auditory feedback: Real-time velocity feedback in the form of beeps/tones.
-  Visual feedback: Real-time velocity feedback on charts/graphs.

This real-time feedback drives intent and motivation in athletes, helping them achieve enhanced training outcomes.

# OUTPUT WALKTHROUGH

Click to watch!



Take the next step by talking to one of our experts to see if Output is the right fit for you and your business.

**SCHEDULE A CALL**

