

Issue Summary Converting Watts to METs

Applies To Any SportsArt equipment with METs calculation

<p>Detailed Problem Description</p>	<p>What is the standard calculation to convert Watts to METs?</p>
<p>Procedure Overview</p>	<ol style="list-style-type: none"> 1) Constants 2) Calculations 3) Example 4) SportsArt Equipment
<p>1) Constants</p>	<p>A) 1 Watt is equal to</p> <ol style="list-style-type: none"> 1) 0.0143 kcal/min 2) 1 Joule/second <p>B) 1 Litre of O₂ = 5.05 kcal C) 1 MET = 3.5 mL O₂ per Kg body weight per minute D) 1 pound = 0.454 kg (divide weight in pounds by 2.2 to get kilograms)</p>
<p>2) Calculations</p> <p>A) Watts to kcal/min B) kcal/min to litres of O₂ C) litres of O₂ to mL/Kg/min D) mL/Kg/min to METs</p>	<p>A) Multiply Watts by 0.0143 to get kcal/min B) Divide kcal/min by 5.05 to get litres of O₂/min C) Divide litres of O₂/min by bodyweight in kg (pounds ÷ 2.2) to get mL/kg/min D) Divide mL O₂/kg/min by 3.5 to get METs</p>
<p>3) Example</p>	<p>For a 180 pound user outputting 250 Watts, what is the MET?</p> <p><i>Convert 180 pounds to kg: 180 ÷ 2.2 = 81.82 kg</i> <i>Convert watts to kcal/min: 250 × 0.0143 = 3.575 kcal/min</i> <i>Convert kcal/min to Litres O₂/min: 3.575 kcal/min ÷ 5.05 kcal/L O₂ = 0.71 litres O₂/min</i> <i>Convert litres O₂/min to mL/kg/min: 0.71 litres O₂ × 1000 mL/litre = 710 mL</i> <i>710 mL/min ÷ 81.82 kg = 8.68 mL O₂/kg·min</i> <i>Convert mL O₂/kg·min to METs: 8.68 mL O₂/kg·min ÷ 3.5mL/kg/min = 2.48 METs</i></p>
<p>4) SportsArt Equipment</p>	<p>SportsArt equipment utilizes a multiplicative factor of +1.05 when calculating METs when compared to the standard formula in Section 2, above.</p> <p><i>Standard METs calculation to SportsArt formula: 2.48 METs × 1.05 = 2.60 METs</i></p>