AI-03498 MaxHR 59yom and Heartzones

Owner	Ⓡ Rigel Arcayan
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Calculate maxHR and heart zones of an active cyclist 500 miles per week average , 59 yom. calculate power-based training zones (FTP-related) . Then, Summarize values in one table for easy reading

For a 59-year-old highly trained cyclist averaging ~500 miles/week, we can estimate heart-rate zones and FTP-based power zones using endurance athlete standards.

1️⃣ Estimated Maximum Heart Rate (MaxHR)

Standard formulas:

- 220 − age = 161 bpm
- Tanaka formula (more accurate for older athletes)
  → 208 − (0.7 × 59) = 167 bpm

👉 For trained endurance athletes, Tanaka is preferred.

✅ Estimated MaxHR: ~167 bpm

Note: Field testing (max hill climb or lab test) gives the most accurate value.

2️⃣ Heart Rate Training Zones (Cycling)

Using endurance training zones (based on MaxHR):

Zone	Intensity	% MaxHR	Heart Rate (bpm)	Purpose
Z1	Recovery	50–60%	84–100	circulation & recovery
Z2	Endurance	60–70%	100–117	fat oxidation & aerobic base
Z3	Tempo	70–80%	117–134	muscular endurance
Z4	Threshold	80–90%	134–150	lactate threshold
Z5	VO_2 max	90–100%	150–167	high-intensity capacity

💡 A high-volume cyclist spends most time in Z2–Z3.

3️⃣ Power-Based Training Zones (FTP Model)

Power zones depend on Functional Threshold Power (FTP) — the highest average power sustainable for ~60 minutes.

Since FTP isn't provided, zones are expressed as % of FTP.

🚴 Coggan Power Zones (Standard for cycling)

Zone	Name	% FTP	Purpose
Z1	Active Recovery	<55%	recovery rides
Z2	Endurance	56–75%	aerobic base
Z3	Tempo	76–90%	sustained aerobic work
Z4	Lactate Threshold	91–105%	FTP improvement
Z5	VO_2 Max	106–120%	aerobic capacity
Z6	Anaerobic	121–150%	short power bursts
Z7	Neuromuscular	>150%	sprint power

4️⃣ Example FTP Estimate (Optional)

Highly active 59-year-old cyclists often fall within:

- 2.8 – 4.2 W/kg

Example:

- 70 kg rider → FTP ≈ 196 – 294 watts

If you share weight & recent power data, I can compute precise zones.

✅ Summary Table (Quick Reference)

Metric	Zone	Range
Max HR	—	~167 bpm
HR Z1	Recovery	84–100 bpm
HR Z2	Endurance	100–117 bpm
HR Z3	Tempo	117–134 bpm
HR Z4	Threshold	134–150 bpm
HR Z5	VO_2 Max	150–167 bpm
Power Z1	Recovery	<55% FTP
Power Z2	Endurance	56–75% FTP
Power Z3	Tempo	76–90% FTP
Power Z4	Threshold	91–105% FTP
Power Z5	VO_2 Max	106–120% FTP
Power Z6	Anaerobic	121–150% FTP
Power Z7	Sprint	>150% FTP

If you want, I can also:

✅ Estimate true zones using resting HR (Karvonen method)

✅ Calculate zones from a known FTP

✅ Suggest a polarized training distribution for endurance cyclists

✅ Provide a 59+ aging endurance optimization plan

Just tell me. 🚴