

## Personal Bicycle Fitting Report Rider Information



Courtney Saario  
Specialized Dolce

### PRE-FIT NOTES

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Courtney is a recreational cyclist coming in today for a fit on her road bike. She enjoys riding with friends and in group rides. She has had left knee issues while riding. Flexibility assessment reveals excellent range of motion at all joints. Forefoot angle is slightly varus. Standard Arch with pronation. 1/3 knee bend difficulty. No apparent leg length discrepancy.

Rider is warmed up on a Cyclops PowerBeam Pro electromagnetically-braked ergometer at 100 watts. The rider is prepared for 3D Motion Capture by marking the following eight bilateral anatomical structures with infrared markers:

Head of 5th Metatarsal Head (ball of foot), Distal end of Calcaneus (heel), Lateral Malleolus (ankle), Lateral Femoral Condyle (knee), Greater Trochanter (hip), Acromion (shoulder), Lateral Epicondyle (Elbow), Dorsum (upside) of wrist joint.

### DURING-FIT NOTES

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15 second data captures are taken at 30 watt increments until the rider perceives the effort to represent 7 on a scale of 10 (10/10 is theoretically the power associated with VO2max). 3D angles and other fit parameters (see pages 4 and 5) represent an average of the number of events (example knee angle extension) recorded within the capture time. This is a Retül-specific technique called Stroke Intelligence.

The following changes are made:

1. Saddle moved up 4 cm
2. Saddle was moved forward 20 cm
3. Cleat was moved back 5 mm
4. Narrowed stance width
5. Saddle was rotated nose down 2 degrees
6. Made stem angle plus 8

### POST-FIT NOTES

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A neutral fit was achieved today. It is important that you remember that after a bike fit there is a short period of time under which the body undergoes adaptation to the changes made during the fit. During this time, it is recommended that you reduce your riding intensity to ensure that the adaptation process is a success. It is normal to experience some different muscle usage and stresses. As you move forward in your cycling career, we do recommend continued work on your flexibility and core strength. This will ensure that you can reach your performance goals without compromise.

Good luck this season!! And please let me know if there is anything else we can do to make your ride more enjoyable.

### SITE & SESSION INFO

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**NAME:** Retül Studios Denver  
**OPERATOR:** Todd Carver  
**PHONE:** 720.406.1171  
**DATE/TIME:** 2011/05/19, 11:13

**ADDRESS:** 2449 Larimer St.  
Denver, CO 80215  
USA  
**WEBSITE:** www.retul.com

THIS BIKE FIT PERFORMED USING THE RETÜL SYSTEM 

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## Rider Information



Courtney Saario  
Specialized Dolce

### Before

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### After

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### SITE & SESSION INFO

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**NAME:** Retul Studios Denver  
**OPERATOR:** Todd Carver  
**PHONE:** 720.406.1171  
**DATE/TIME:** 2011/05/19, 12:20

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# Personal Bicycle Fitting Report

## Rider Information



**MAKE/MODEL:** Specialized Dolce  
**NAME:** Courtney Saario  
**SIZE:** 51  
**YEAR:** 2006  
**STYLE:** Road  
**NOTES:**  
**STEM:** x 100  
**SPACER STACK:**  
**CRANK LENGTH:** 170  
**PEDALS:** Look  
**SADDLE:** Specialized  
**BARS:**

### MEASUREMENTS & ANGLES

	<b>Saddle Height</b> BB to center of saddle profile	<b>680 mm</b>		<b>Handlebar Reach</b> tip of saddle horiz to bar top	<b>478 mm</b>
	<b>Saddle Setback</b> BB horiz to front tip of saddle neg denotes saddle behind BB	<b>-26 mm</b>		<b>Handlebar Drop</b> cen of saddle profile to bar top neg denotes denotes bar below saddle	<b>-26 mm</b>
	<b>Saddle Angle</b> angle of saddle to horizon neg denotes nose down	<b>0 deg</b>		<b>Grip Reach</b> tip of saddle horiz to front end of grip	<b>618 mm</b>
	<b>Eff. Seat Tube Angle</b> BB to center of saddle profile	<b>77 deg</b>		<b>Grip Drop</b> cen of saddle to front end of grip, neg denotes grip lower	<b>17 mm</b>
	<b>Grip Angle</b> angle to horizon pos denotes front end up	<b>37 deg</b>		<b>Bar Reach</b> center of bar to back end of grip	<b>50 mm</b>
	<b>Frame Stack</b>	<b>527 mm</b>		<b>Grip Width</b> grip center to center	<b>401 mm</b>
	<b>Frame Reach</b> BB to center of headtube top	<b>378 mm</b>		<b>BB to Grip Reach</b> BB to front end of grip	<b>591 mm</b>
				<b>Handlebar Stack</b>	<b>620 mm</b>
				<b>Handlebar Reach</b> BB to center of bar	<b>451 mm</b>

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**NAME:** Retul Studios Denver  
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## Rider Information



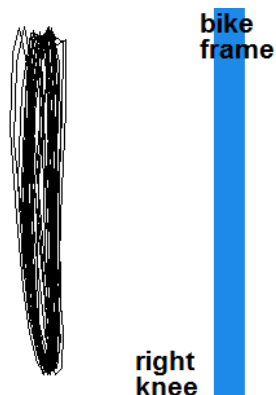
**Courtney Saario**  
 Age 25  
 Female  
 720.998.2713  
 courtney@retul.com

**RIDING STYLE:** Serious  
 Recreational  
**GOALS:** Health and Fitness  
**INJURIES/PAIN:** 4 left knee  
 surgeries  
**FLEXIBILITY:** High  
**TRAINING VOL:** 4

### MEASUREMENTS & ANGLES

	Knee Angle Flexion	<b>113 deg</b>		Ankle Maximum	<b>102 deg</b>
	Knee Angle Extension	<b>39 deg</b>		Ankle Minimum	<b>83 deg</b>
				Ankle Range	<b>19 deg</b>
	Knee Forward of Foot	<b>11 mm</b>		Knee Travel Tilt	<b>1 deg</b>
	Knee Lateral Travel	<b>26 mm</b>			
	Hip Angle Closed	<b>60 deg</b>		Hip Vertical Travel	<b>54 mm</b>
	Hip Angle Open	<b>110 deg</b>		Back Angle	<b>46 deg</b>
	Hip to Wrist Vertical	<b>-48 mm</b>		Hip to Elbow Vertical	<b>116 mm</b>
	Hip to Wrist Horizontal	<b>659 mm</b>		Hip to Elbow Horizontal	<b>436 mm</b>
	Hip Foot Lateral Offset	<b>-1 mm</b>		Shoulder Angle to Elbow	<b>65 deg</b>
	Elbow Angle	<b>147 deg</b>		Shoulder Angle to Wrist	<b>82 deg</b>
	Forearm Angle	<b>-36 deg</b>			
	Thigh Length	<b>392 mm</b>		Power Output Ave (Max)	<b>170 W(173 W)</b>
	Shin Length	<b>387 mm</b>		Speed Ave (Max)	<b>14 MPH(14 MPH)</b>
				Cadence Ave (Max)	<b>87 RPM(101 RPM)</b>

### KNEE TRACING (FRONT VIEW)



### BIKE & SESSION INFO

**MAKE/MODEL:** Specialized Dolce  
**TYPE:** Road  
**PEDALS:** Clipless  
**HANDLEBAR:** Drop  
**DATE/TIME:** 2011/05/19 12:15  
**SIDE:** right #10  
**DURATION:** 15 sec  
**NOTES:** Final Capture

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**GOALS:** Health and Fitness  
**INJURIES/PAIN:** 4 left knee  
 surgeries  
**FLEXIBILITY:** High  
**TRAINING VOL:** 4

### MEASUREMENTS & ANGLES

	Knee Angle Flexion	<b>116 deg</b>		Ankle Maximum	<b>95 deg</b>
	Knee Angle Extension	<b>37 deg</b>		Ankle Minimum	<b>75 deg</b>
				Ankle Range	<b>20 deg</b>
	Knee Forward of Foot	<b>20 mm</b>		Knee Travel Tilt	<b>-4 deg</b>
	Knee Lateral Travel	<b>25 mm</b>			
	Hip Angle Closed	<b>62 deg</b>		Hip Vertical Travel	<b>56 mm</b>
	Hip Angle Open	<b>113 deg</b>		Back Angle	<b>45 deg</b>
	Hip to Wrist Vertical	<b>-57 mm</b>		Hip to Elbow Vertical	<b>62 mm</b>
	Hip to Wrist Horizontal	<b>640 mm</b>		Hip to Elbow Horizontal	<b>419 mm</b>
	Hip Foot Lateral Offset	<b>-1 mm</b>		Shoulder Angle to Elbow	<b>63 deg</b>
				Shoulder Angle to Wrist	<b>83 deg</b>
	Elbow Angle	<b>136 deg</b>		Forearm Angle	<b>-28 deg</b>
	Thigh Length	<b>398 mm</b>		Power Output Ave (Max)	<b>170 W(173 W)</b>
	Shin Length	<b>381 mm</b>		Speed Ave (Max)	<b>13 MPH(13 MPH)</b>
				Cadence Ave (Max)	<b>80 RPM(91 RPM)</b>

### KNEE TRACING (FRONT VIEW)

bike frame



left knee



### BIKE & SESSION INFO

**MAKE/MODEL:** Specialized Dolce  
**TYPE:** Road  
**PEDALS:** Clipless  
**HANDLEBAR:** Drop  
**DATE/TIME:** 2011/05/19 12:12  
**SIDE:** left #9  
**DURATION:** 15 sec  
**NOTES:** Final Capture

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