Rowing cycle style research protocol

Research date 31.03.2019

Style Kayak. Basic style

Parameter	Value	Unit
Type of boat	K1	
Length of the boat	5,20	m
Boat mass	16,00	kg
Length of the paddle	2,20	m
	0,40	
Paddle blade area	0,12	m²
Cycle duration	1,00	sec

Crew

Name / Nickname	Age (years)	Sex	Body mass (kg)	Height (cm)
Athlete A	39	Male	80	180

Storyboard

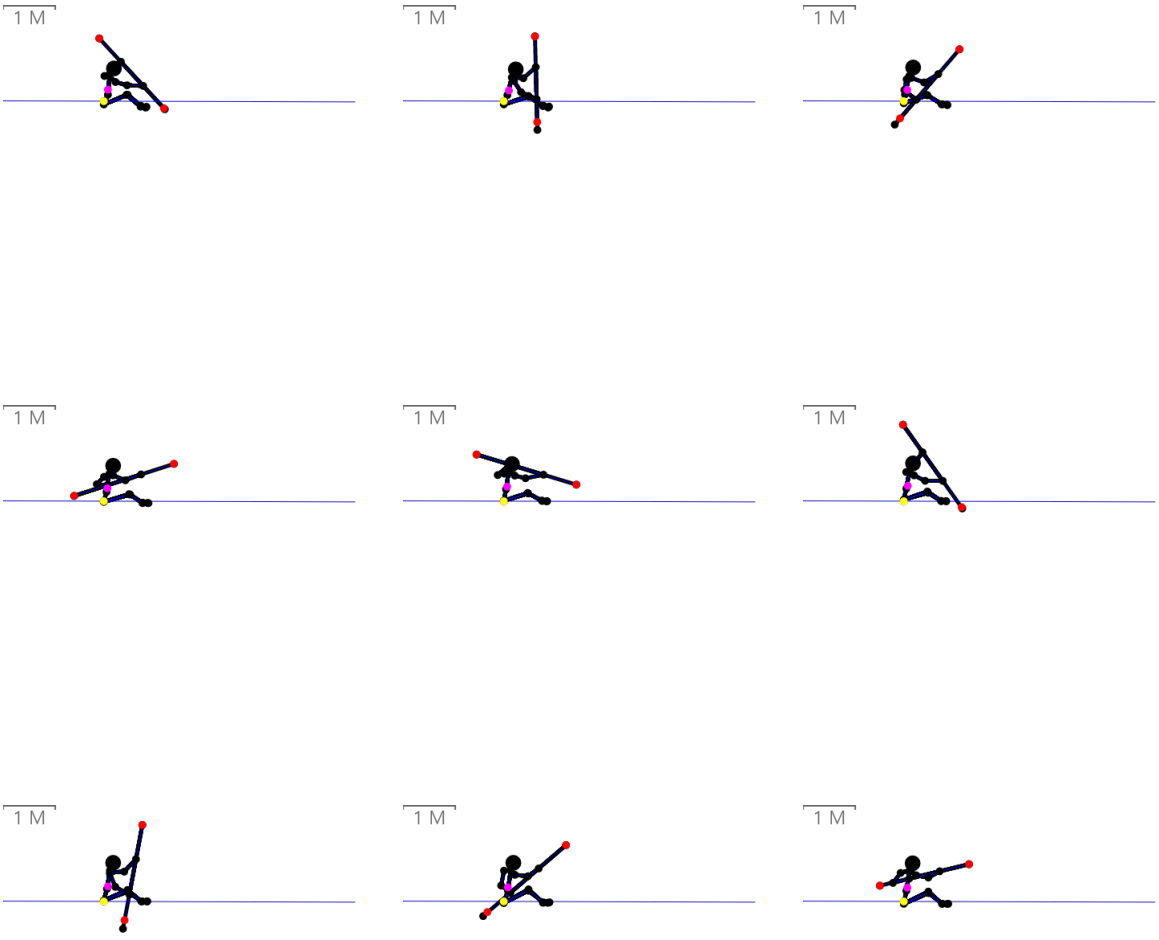
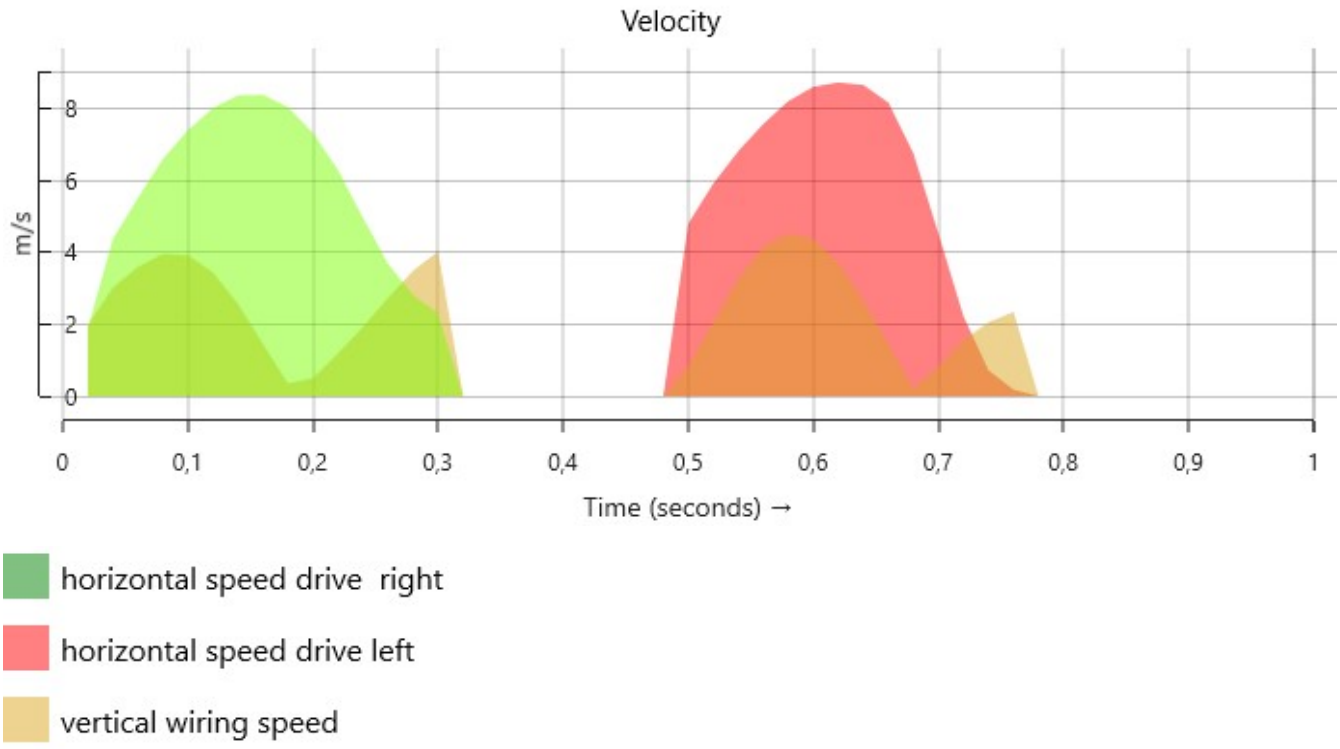


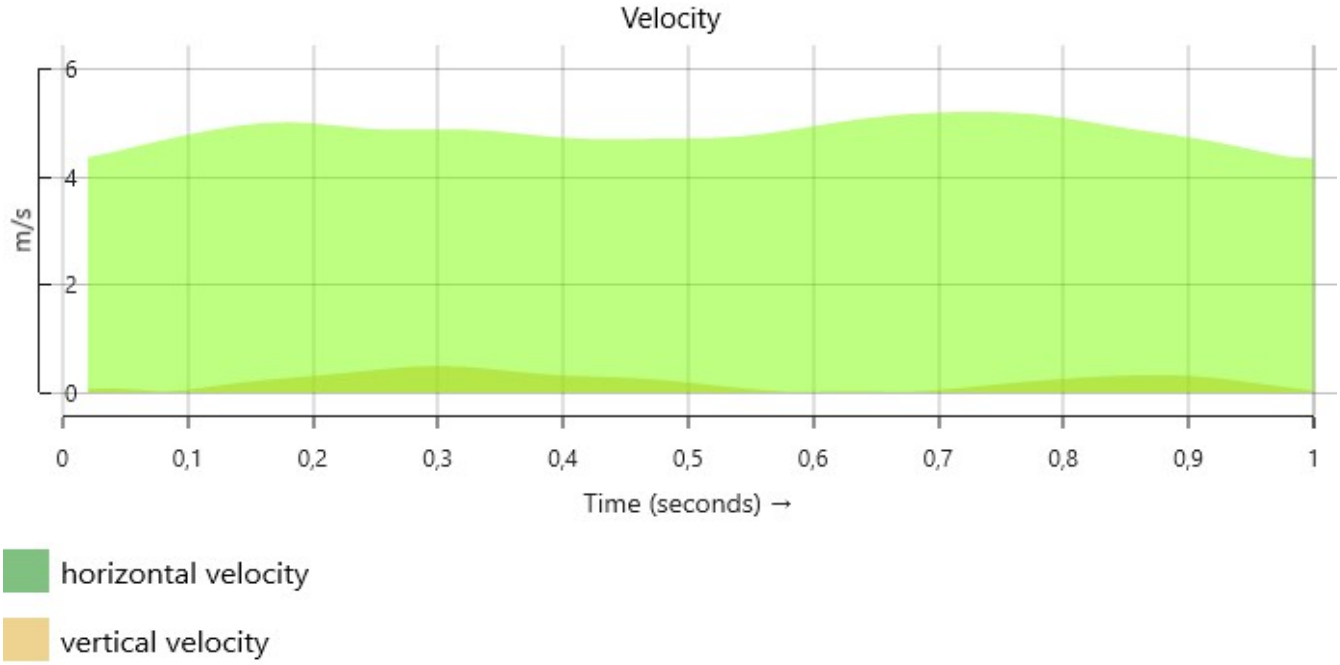
Diagram 1. Velocity of paddle blade relative to boat[1]



[1]There is an absolute value of the speed of the blade (Canoe and Dragon) or blades (Kayak) of paddles relative to the coordinate system associated with the boat. The main criterion for perfection of style is the absence of sharp jumps in speed in the dragging phase.

Diagram 2. Boat velocity[1]

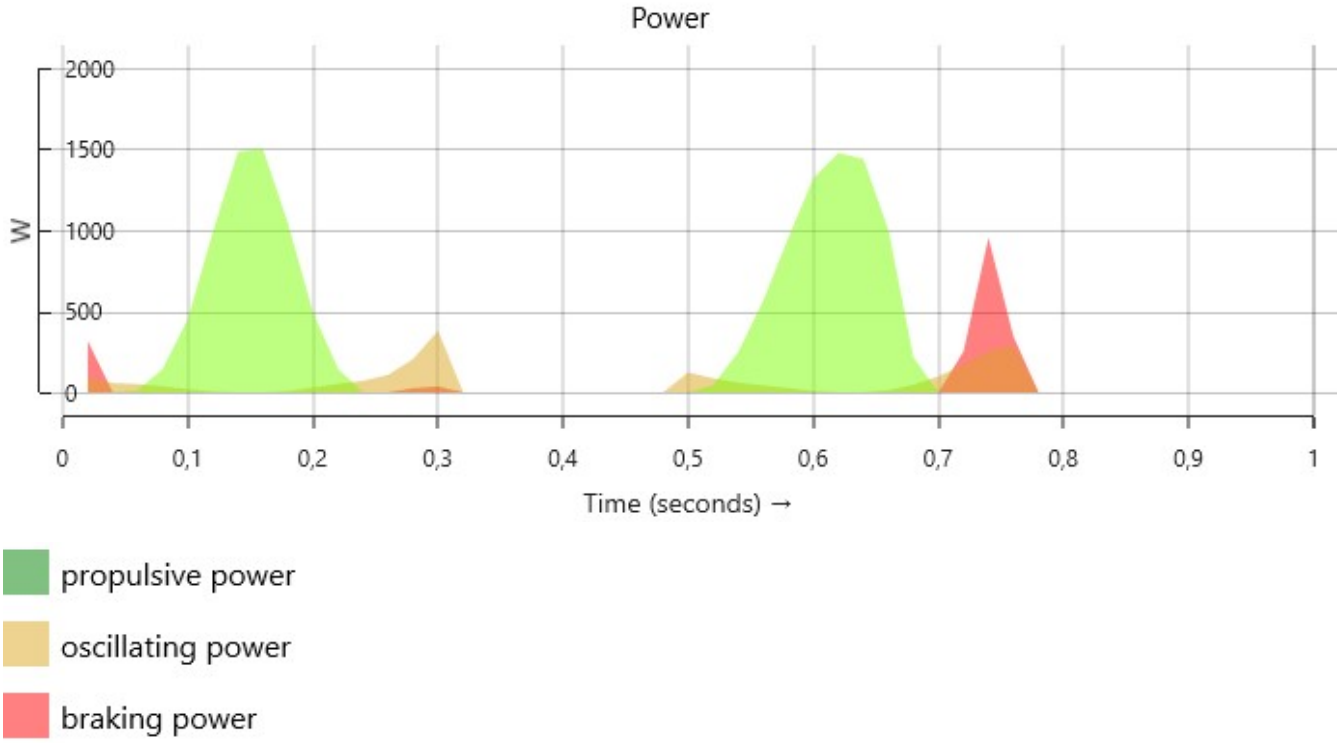
Position: at the race



[1]The absolute value of the speed of movement of the boat relative to the coordinate system associated with water is observed. The main criterion for perfection of style can be the absence of speed jumps in all phases of the motion cycle (uniform boat movement).

Diagram 3. Power of forces at the paddle[1]

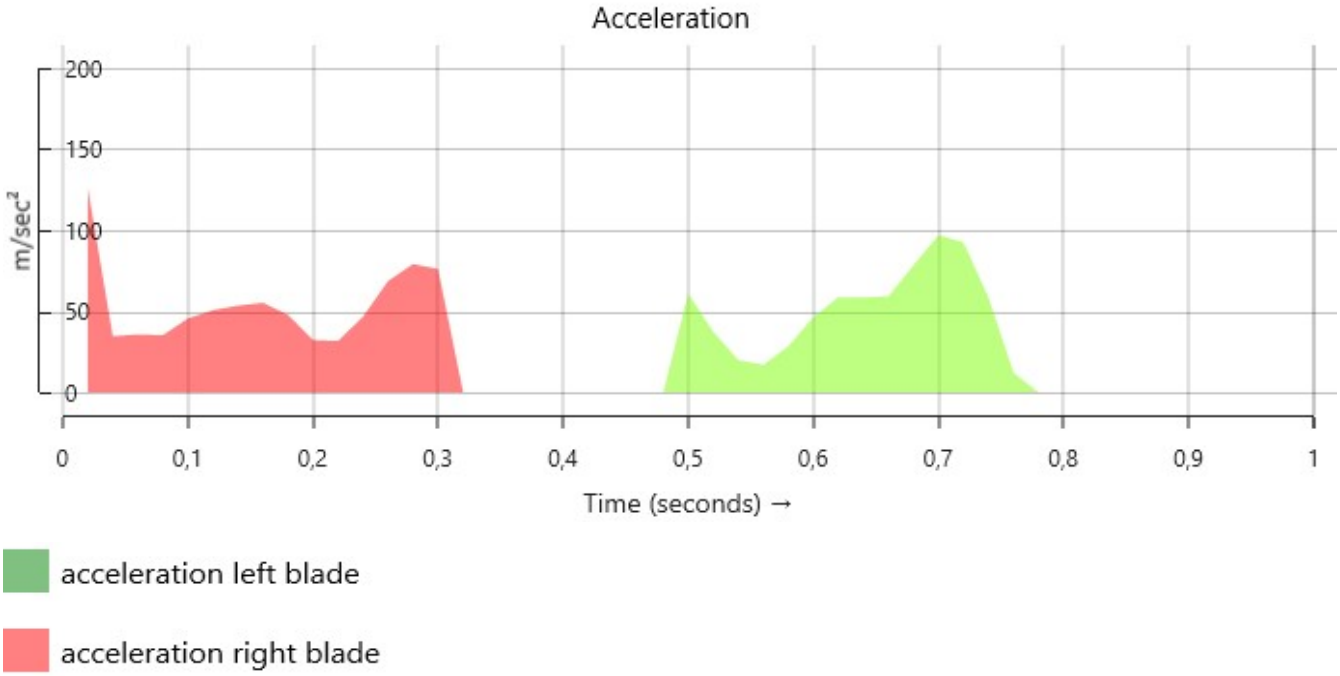
Position: at the race



[1]Power values of forces applied to the blades (canoe and dragon) or blades (kayak) paddles are observed. These powers may be useful (for propulsive forces) or useless or inhibitory. Braking power occurs when the paddle blade moves relative to the water in the opposite direction of the boat. The main criterion for perfection of style is the lack of braking power. Equal space under the propulsive power curve for the left and right hands is also important for the kayak.

Diagram 4. Acceleration paddle blades[1]

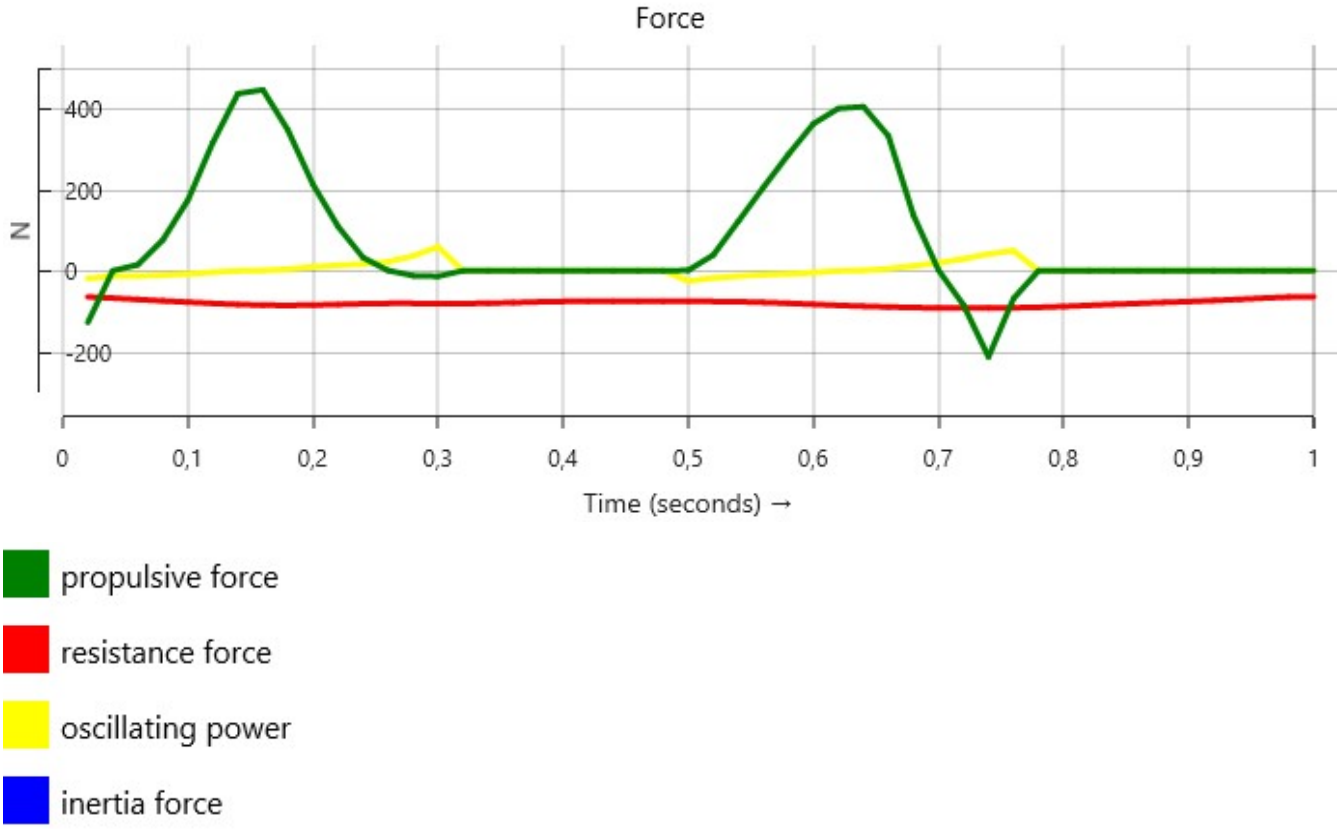
Position: at the race



[1]The absolute values of the acceleration of the blade (Canoe and Dragon) or the blades (Kayak) of the paddle are observed relative to the coordinate system associated with the boat. The main criterion for perfection of style is the absence of large values of accelerations in the wiring phase. A large amount of acceleration is a sign of the “paddle breakthrough” phenomenon.

Diagram 5. Forces[1]

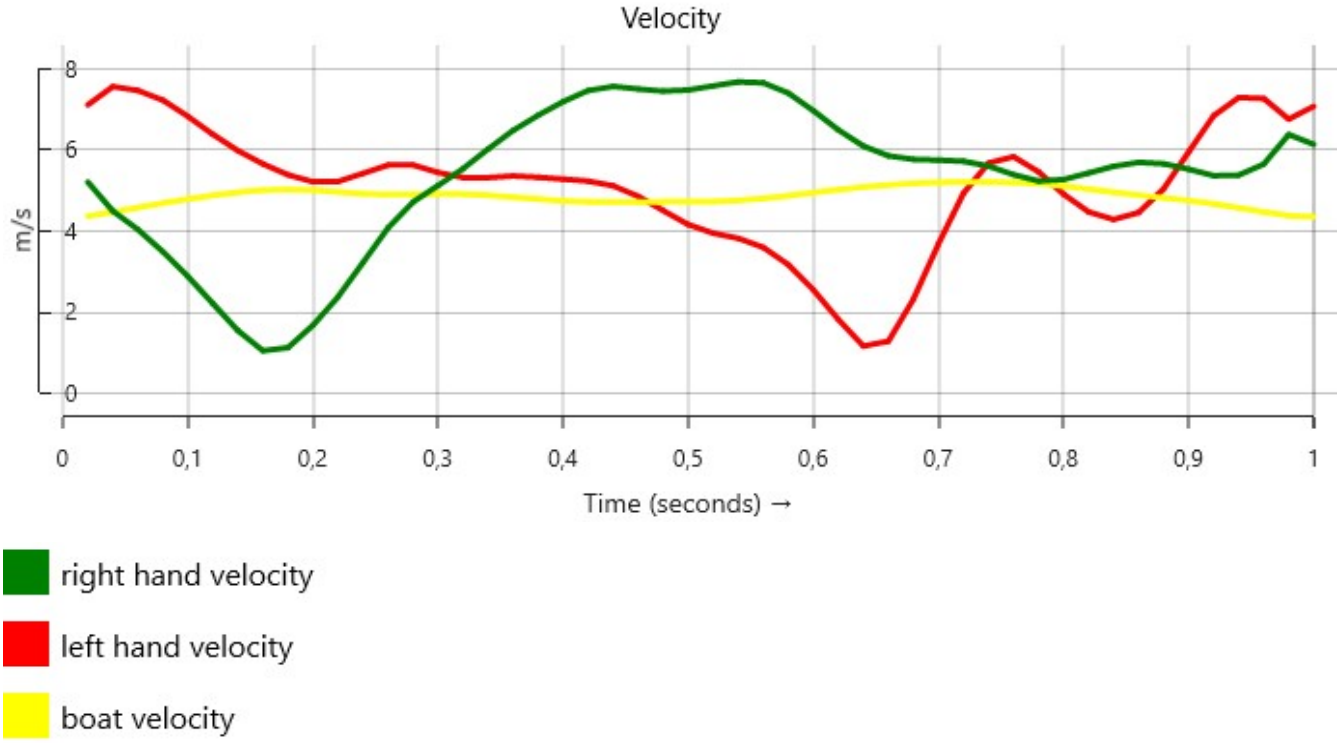
Position: at the race



[1]Observed values of forces applied to various points of the boat-rower-paddle system. These forces may be useful (propulsive forces), useless or inhibitory. Braking forces arise, for example, when the paddle blade moves relative to water in the opposite direction of the boat. The main criterion for perfection of style is the absence of negative values on the curve of propulsive force. For a kayak, the symmetry of the propulsive force for the left and right hands is important.

Diagram 6. Velocity[1]

Position: at the race



[1]The absolute values of the speeds of movement of the rower's hands relative to the coordinate system associated with water are observed. For comparison, there is a curve of the speed of the boat relative to water. The main criterion for perfection of style can be the absence of speed jumps in all phases of the motor cycle (smooth movements).