

Measurement report

# Tallinna Sügisjooks

10 km

Karen Aau  
WA - AIMS B grade measurer  
August 2024

## GENERAL INFORMATION

**Name of measurer:** Karen Aau, B grade measurer

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**Name of event:** Tallinna Sügisjooks

**Location:** Tallinn, Estonia

**Race date:** 07.09.2024

**Distance:** 10 km

**Advertised race distance:** not less than 10000 m

**Race contact person:** Mati Lilliallik

**Phone:** +372 521 3331

**E-mail:** jooks@jooks.ee

### Description of the course

**Type of course:** flat, point to point

**Race surface:** asphalt

**Separation:** 0,97%

**Altitude:**

Start – 18,5 m, Finish 23,5 m

Highest point – 27 m, Lowest point – 7 m

Difference in elevation highest > lowest point – 20 m

### Measurement details

**Section of road available:** Mostly entire width of road, except Toompuiestee St (Old Town side lane)

**Line to be taken at turns:** shortest possible route

## DETAIL OF THE CALIBRATION COURSE

**Date:** 01.08.2022

**Location of calibration course:** bathway at Kõrgepinge street near Paldiski road

**Measure method:** steel taped

**Number of measurements:** 2

**Markers:** nails

**Start time:** 11:30

**Finish time:** 12:00

**Temperature:** *Start* +19°C, *Finish* +19°C, *Average* +19°C

### MEASUREMENTS AND CALCULATIONS:

1 First measurement.

$$\frac{6}{\text{\# tape lengths}} \times \frac{49,9 \text{ m}}{\text{distance per tape length}} + \frac{0,6 \text{ m}}{\text{partial tape length}} = \frac{300 \text{ m}}{\text{measured distance}}$$

2 Second measurement.

$$\frac{6}{\text{\# tape lengths}} \times \frac{49,9 \text{ m}}{\text{distance per tape length}} + \frac{0,612 \text{ m}}{\text{partial tape length}} = \frac{300,012 \text{ m}}{\text{measured distance}}$$

3 Average raw (uncorrected) measurement of course 300,006 m

4 Temperature correction.

$$\text{Correction factor} = 1 + (0.0000116 \times [19 - 20]) = 0,9999884$$

5 Multiply the temperature correction factor by the average raw measurement of the course

$$\frac{0,9999884}{\text{correction factor}} \times \frac{300,006 \text{ m}}{\text{avg. raw measurement}} = \frac{300,0025199 \text{ m}}{\text{corrected measurement}}$$

6 Final (adjusted) length of calibration course: **300 m**

$$\underline{300,0025199 \text{ m}} - 0,0025199 \text{ m} = 300\text{m}$$

**Summary:** To get 300 m length calibration course, divorced 2,5 mm with steel tape.

## BICYCLE CALIBRATION DATA SHEET

### PRE-CALIBRATION:

**Day:** 02.08.2022

**Time:** 23.10

**Temperature:** +18°C

<b>Start count</b>	<b>Finish count</b>	<b>Difference</b>
740555	743842	3287
743842	747129	3287
747129	750416	3287
750416	753703	3287

Pre-measurement average count =  $(3287+3287+3287+3287) / 4 = 3287$

Counts per km =  $3287 \times 1000 / 300 = 10956,6667$

**Working Constant** =  $10956,6667 \times 1,001 / 1000 = 10,9676233$  c/m

### POST-CALIBRATION:

**Day:** 03.08.2022

**Time:** 2.10

**Temperature:** +15°C

<b>Start count</b>	<b>Finish count</b>	<b>Difference</b>
964070	967358	3288
967358	970646	3288
970646	973934	3288
973934	977223	3289

Post-measurement average count =  $(3288+3288+3288+3289) / 4 = 3288,25$

Counts per km =  $3288,25 \times 1000 / 300 = 10960,8333$

**Working Constant** =  $10960,8333 \times 1,001 / 1000 = 10,9717942$  c/m

**CONSTANT FOR THE DAY** =  $(10,9676233+10,9717942) / 2 = 10,9697087$  c/m

**PRE-CALIBRATION:****Day:** 09.08.2022**Time:** 21.10**Temperature:** +18°C

<b>Start count</b>	<b>Finish count</b>	<b>Difference</b>
86837	90129	3292
90129	93422	3293
93422	96714	3292
96714	100006	3292

Pre-measurement average count =  $(3292+3293+3292+3292) / 4 = 3292,25$ Counts per km =  $3292,25 \times 1000 / 300 = 10974,1667$ **Working Constant** =  $10974,1667 \times 1,001 / 1000 = \mathbf{10,9851408 \text{ c/m}}$ **POST-CALIBRATION:****Day:** 09.08.2022**Time:** 23.45**Temperature:** +14°C

<b>Start count</b>	<b>Finish count</b>	<b>Difference</b>
171000	174294	3294
174294	177588	3294
177588	180882	3294
180882	184175	3293

Post-measurement average count =  $(3294+3294+3294+3293) / 4 = 3293,75$ Counts per km =  $3293,75 \times 1000 / 300 = 10979,1667$ **Working Constant** =  $10979,1667 \times 1,001 / 1000 = \mathbf{10,9901458 \text{ c/m}}$ **CONSTANT FOR THE DAY** =  $(10,9851408+10,9901458) / 2 = \mathbf{10,9876433 \text{ c/m}}$

**PRE-CALIBRATION:**
**Day:** 09.08.2023

**Time:** 22.30

**Temperature:** +15°C

Start count	Finish count	Difference
283790	287079	3289
287079	290368	3289
290368	293658	3290
293658	296948	3290

 Pre-measurement average count =  $(3289+3289+3290+3290) / 4 = 3289,5$ 

 Counts per km =  $3289,5 \times 1000 / 300 = 10965$ 
**Working Constant =  $10965 \times 1,001 / 1000 = 10,975965$  c/m**
**POST-CALIBRATION:**
**Day:** 10.08.2023

**Time:** 02.05

**Temperature:** +13°C

Start count	Finish count	Difference
423438	426728	3290
426728	430019	3291
430019	433310	3291
433310	436600	3290

 Post-measurement average count =  $(3290+3291+3291+3290) / 4 = 3290,5$ 

 Counts per km =  $3290,5 \times 1000 / 300 = 10968,33333$ 
**Working Constant =  $10968,33333 \times 1,001 / 1000 = 10,97930166$  c/m**
**CONSTANT FOR THE DAY =  $(10,975965+10,97930166) / 2 = 10,97763333$  c/m**

**PRE-CALIBRATION:****Day:** 07.08.2024**Time:** 21.30**Temperature:** +19°C

<b>Start count</b>	<b>Finish count</b>	<b>Difference</b>
340285	343567	3282
343567	346849	3282
346849	350131	3282
350131	353412	3281

Pre-measurement average count =  $(3282+3282+3282+3281) / 4 = 3281,75$ Counts per km =  $3281,75 \times 1000 / 300 = 10939,16666$ **Working Constant** =  $10939,16666 \times 1,001 / 1000 = \mathbf{10,95010582 \text{ c/m}}$ **POST-CALIBRATION:****Day:** 08.08.2024**Time:** 00.15**Temperature:** +16°C

<b>Start count</b>	<b>Finish count</b>	<b>Difference</b>
461230	464514	3284
464514	467798	3284
467798	471082	3284
471082	474366	3284

Post-measurement average count =  $(3284+3284+3284+3284) / 4 = 3284$ Counts per km =  $3284 \times 1000 / 300 = 10946,66666$ **Working Constant** =  $10946,66666 \times 1,001 / 1000 = \mathbf{10,95761332 \text{ c/m}}$ **CONSTANT FOR THE DAY** =  $(10,95010582+10,95761332) / 2 = \mathbf{10,95385957 \text{ c/m}}$

## COURSE MEASUREMENT DATA SHEET

reading	counts	distance	adj.dist	location
<i>Measured in reverse of running direction, 03.08.2022, c=10,9697087 c/m</i>				
<i>--- adjustment here removes 1058 counts c = 10,95385957c/m =96,6 m ---</i>				
899456	0	0.0m		START - at Falgi tee near pc (detailed sketch attached)
917394	17938	<b>1635,2 m</b>	<b>1538,6 m</b>	P1 - the edge of the manhole cover before the turn to Kolde pst
791085	0	1635,2 m	1538,6 m	P1 - the edge of the manhole cover before the turn to Kolde pst
798522	7437	<b>2313,2 m</b>	<b>2216,6 m</b>	P2 - pc post right hand before turning to Ristiku St
<i>Measured in running direction, 03.08.2022, c=10,9697087 c/m</i>				
799026	0	2313,2 m	2209,2 m	P2 - pc post right hand before turning to Ristiku St
805598	6572	<b>2912,3 m</b>	<b>2815,7 m</b>	P3 - pc post right hand after Luste St
<i>Measured in running direction, 07.08.2024, c = 10,95385957</i>				
399363	0	2912,3 m	2808,3 m	P3 - pc post right hand after Luste St
418918	19555	4697,5 m	4600,9 m	P4 - lp post left hand before turn to Tööstuse St
429850	10932	5695,5 m	5598,9 m	P5 - black lp left hand before entering seaplane harbour
<i>--- adjustment here with steel tape adds 1,2 m ---</i>				
434526	4676	<b>6122,4 m</b>	<b>6027,0 m</b>	P6 - pc post right hand after exiting seaplane harbour
<i>Measured in reverse of running direction, 03.08.2022, c=10,9697087 m</i>				
145446	0	6122,4 m	6027,0 m	P6 - pc post right hand after exiting seaplane harbour
154348	8902	<b>6932,6 m</b>	<b>6837,2 m</b>	P7 - parking area ending sign post right hand
<i>Measured in running direction, 07.08.2024, c = 10,95385957</i>				
435582	0	6932,6 m	6837,2 m	P7 - parking area ending sign post right hand
456070	20488	<b>8803,3 m</b>	<b>8707,6 m</b>	P8 - pc sign post right hand before Kopli/Suurtüki St corner
<i>Measured in reverse of running direction, 09.08.2023, c=10,97763333 m</i>				
346582	0	8803,3 m	8707,6 m	P8 - pc sign post right hand before Kopli/Suurtüki St corner
353671	7089	<b>9448,8 m</b>	<b>9353,4 m</b>	P9 - manhole cover Center left hand near Toompuiestee 37/1
<i>--- adjustment here with steel tape removes 6,3 m ---</i>				
319452	0	9448,8 m	9353,4 m	P9 - manhole cover Center left hand near Toompuiestee 37/1
326550	7098	<b>10095,4 m</b>	<b>10000,0 m</b>	FINISH - at Falgi tee near pc (detailed sketch attached)

### Note any adjustments made to the course after measurement:

Adjustments made between START – P1 (new startline, removed 96,6 m with bicycle) and P9 – FINIŠ (new finish line, removed 6,3 meters with steel tape)

### Notes:

lp= lamp post

pc=pedestrian crossing



## CALIBRATION COURSE





## START LINE



## FINISH LINE



**SEAPLANE HARBOUR (P5 – P6)**

