

Master's Thesis

Diurnal Pattern and Variation of Electrocardiographic QT Interval in Healthy Resting Horses

Sine Bomskov Møller

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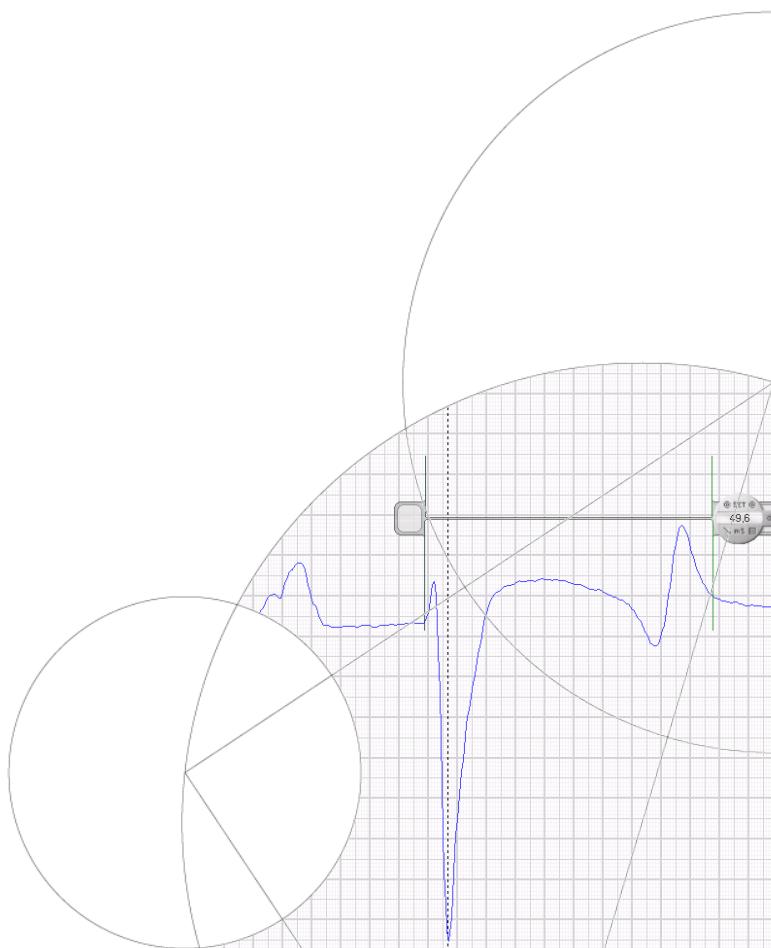
Academic advisors:

Rikke Buhl

Philip Juul Pedersen

Dan Klærke

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Preface

This report is written as a part of a Master's Thesis in Veterinary Medicine. The project was made as part of the work within the Equine Cardiac Group. The Equine Cardiac Group is collaboration between the Department of Large Animal Sciences, the Department of Basic Animal and Veterinary Sciences and the Laboratory of Experimental Cardiology, the Department of Biomedical Sciences at the University of Copenhagen. It has been my great pleasure working as part of an engaged team so strongly dedicated to their field.

The article is the outcome of this thesis. The requirements of the Journal of Veterinary Cardiology have been used as a guideline. In order to accommodate the nature of the thesis project, an extended theoretical background is presented with the introduction. Perspective and further considerations of the project are described in the end of the report in the context of the other work done in the Equine Cardiac Group.

All illustrations and tables are made by the author, including the title page picture.

A great thank you to Philip Pedersen for lively discussions, pitching ideas, a lot of work, help with the data and support in the late hours. Rikke Buhl, for your optimism that brightens the day, giving me responsibility and constructively guiding my writing.

Thank you, family and friends for support, cheer and worry throughout the process. Thank you, Katharina Opstrup for proof reading the article. Gardehusarregimentet Hesteskadron and the Large Animal Hospital, University of Copenhagen for supplying the horses used in this study making it possible in the first place.

Sine Bomskov Møller 19.04.2013

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Abstract

Objectives: The objective of this study was to describe the diurnal variation of HR and QT_c and estimate sources of variance of QT_c in healthy horses at rest.

Animals: 12 warmblood sport horses, geldings.

Methods: 2 stables (n=6) were recorded with Holter/telemetric ECG for 24 hours on day 1, 7 and 14. RR, QT_{peak} and QT were measured manually with on-screen calipers by one observer. QT was corrected for HR using equine specific linear regression. Five consecutive heart beats were averaged for each hour. Diurnal pattern was described by one-way ANOVA between evening (14:00-21:00), night (22:00-05:00) and morning (06:00-12:00) intervals of HR, QT, QT_c and Slope_{QT/RR}. PROC MIXED statistical analysis was performed to describe the variance of QT_c.

Results: Average values (24 hours): HR (34.82bpm ± 4.02), QT (517.17ms ± 20.83) and QT_c (462.98ms ± 21.06). HR average significantly decreased from evening to night and morning ($P < 0.001$). QT_c average evening was significantly higher compared to night ($P < 0.0483$). No significant difference was found between Slope_{QT/RR} time periods ($P = 0.2882$). Time and day had significantly systematic fixed effect. Sources of QT_c variance: 55.21% between horses, 22.98% between stables, 5.37% day-to-day (within horse) and 16.43% residuals.

Conclusions: The longest average QT_c was in the evening where HR was highest. QT_c was longer on day 1 compared to day 2 and 3. This is different from what is found in humans. Serial correlation was modelled successfully. Age had no significant effect. Great individuality was found among horses. Sources of QT_c variance should be considered in thorough QT studies.

Resumé

Formål: at undersøge døgnvariationen af puls og QT hos hvilende heste og estimere variansen af QT.

Dyr: 12 varmblodsheste, vallakker.

Metode: 2 stalde (n = 6) blev optaget i 24 timer med Holter/telemetri EKG på dag 1, 7 og 14. RR, QT_{peak} og QT blev målt manuelt med on-screen calipers af en observatør. QT var korrigert for puls ved hjælp af lineær regression, specifik for hest. Gennemsnittet blev taget af fem efterfølgende hjerteslag for hver time. Døgnvariationen af puls, QT, QT_c og Hældning_{QT/RR} blev testet mellem

aften (14:00-21:00), nat (22:00-05:00) og morgen (06:00-12:00) med envejs ANOVA. PROC MIXED statistisk analyse blev brugt til at kvantificere variansen af QT_c.

Resultat: Gennemsnitsværdier (24 timer): puls (34,82slag/min ± 4,02), QT (517,17msek ± 20,83) and QT_c (462,98msek ± 21,06). Gennemsnitspulsen var signifikant højere om aftenen sammenlignet med nat og morgen ($P < 0,001$). Gennemsnits QT_c var signifikant højere om aftenen sammenlignet med nat ($P < 0,0483$). Der var ingen signifikant forskel mellem Hældning_{QT/RR} for de tre tidsperioder ($P = 0,2882$). Tid og dag havde en signifikant effekt. Variansen af QT_c var delt mellem følgende: 55,21 % mellem heste, 22,98 % mellem stalde, 5,37 % dag-til-dag (indenfor hest) og 16,43 % residual.

Konklusion: QT_c var længst om aftenen, hvor pulsen var højest. Der var ingen forlængelse af QT_c om morgen. QT_c var signifikant forlænget på dag 1. Tid og dag havde signifikante fixede effekter. Den serielle korrelation forbedrede modellen. Alder havde ingen signifikant effekt. Den enkelte hest varierer i forhold til andre heste, mellem stalde og indenfor sig selv. Variansen af QT_c bør inkluderes i QT studie design”.

Abbreviations

AIC - Akaike Information Criterion, describing the amount of data lost by modelling, lower is better.

Bpm – beats per minute

Double delta ($\Delta\Delta QT_c$) - ($QT_{c, \text{baseline, treatment}} - QT_{c, \text{treatment}}$) - ($QT_{c, \text{baseline, placebo}} - QT_{c, \text{placebo}}$)

ECG – electrocardiography

HR – heart rate

LQTS – long QT syndrome

QT_c – QT corrected for heart rate

QT₆₀ – QT at 60 bpm

Keywords

ECG, QT_c, equine, diurnal variation, sources of variance

1. Introduction

The foundation of surface electrocardiography (ECG) is electrical changes in cardiomyocytes as the cells depolarise (Na^+ influx) or repolarise (K^+ efflux, Ca^{2+} influx) through selective voltage-dependent ion-channels.¹ The difference in electrical charge across the heart is visible as positive or negative deflection over a lead (+/-) on the surface ECG.² The deflections are named and associated with specific events of the cardiac cycle (Fig. 1).¹ Standardised body and limb positions are published as well as guides for exercise ECG.²⁻⁴ The standard base-apex is commonly used, with various modifications. No generally accepted gold standard is available for horses².



FIGURE 1. Electrocardiographic measures. P wave: atrial contraction, QT-interval: ventricular depolarisation and repolarisation, QRS complex: ventricular depolarization, ST-segment: ventricular repolarisation, RR: pulse.

Prolongation of ventricular repolarisation is of great interest due to the associated increased risk of arrhythmias potentially lead to ventricular fibrillation, torsades de points (TdP) and sudden death.^{5,6} Diagnostic and prognostic measuring of QT are of great value to human cardiology.⁷ Thus, inherited and acquired long QT syndrome (LQTS) are of particular interest in genetics and pharmacology research, respectively. Myocardial potassium channels and their mutations have been described and these are associated with disease and risk in humans.^{8,9}

To estimate a prolongation of the QT-interval in the clinical drug development a thorough QT study must be performed. Guidelines published by IOC addresses study design, QT correction formulas, sensitivity, inter-observer variability and implications.⁵ QT_c interval prolongation of no more than 10 ms (upper 1-sided 95% CI) is acknowledged as a negative result. Also, a positive control (i.e. single dose moxifloxacin, 400 mg) is required to show minimum one time point more than 5 ms

prolongation (lower 1-sided 95% CI) compared to the baseline of placebo.⁵ Standardization is essential in order to test a potential QT prolongation and ensure drug safety.¹⁰

Some drugs are known to prolong QT_c i.e. quinidine (antiarrhythmic), moxifloxacin (antibiotic) and cisapride (gastropromotility)¹¹ through blockade of the KCNH2 channel (I_{kr}).¹² The potassium currents I_{Ks}, I_{Kur} and I_{Kr} are main contributors to the repolarisation of the cardiac cells in humans, dogs and horses.^{1,8,13} Furthermore, I_{Kur} is found in ventricular myocardium in horses.¹ Theoretically, this makes horses susceptible for induced LQTS. Quinidine has been reported to cause sudden death in horses, and it is known for a narrow therapeutic window.^{1,14} Except for rising the heart rate (HR), Cisapride has no reported cases of severe side effects in horses.^{15, 1} Arrhythmias are frequently found in performance horses, especially during the recovery period.^{16,17} The prevalence of arrhythmias at rest is considered normal, as long as they disappear during exercise. Sudden death has been reported in high performance horses.^{18,19} In the case of a heart attack, determination of the cause of death by post mortem investigation is not possible. The prevalence of arrhythmias found in apparent healthy horses could be linked to sudden death in horses, since arrhythmias and LQTS are not visible post mortem.^{18, 19}

The QT interval is HR dependent and shortens when HR rises. Therefore, it is crucial that correction for HR is included when evaluating QT interval's. Bazett's and Fridericia's correction models are most commonly used in human medicine.^{7,20} These models are widely discussed due to their over - and under correcting of QT_c. An equine specific correction model with reference values for QT intervals was published in 2013.²¹ This model separates itself from the human models by being piecewise linear. Correction models calculate the QT_c, but other approaches have been described i.e. beat-to-beat method and linear regression (QT₆₀).^{22,23} The QT₆₀ enables correction without assumptions of the nature of the QT/RR relationship.⁷ The measured QT interval is projected with linear regression to the QT₆₀, based on the predictive graph. This method is applicable on the piecewise linear model and can be used for direct plot of QT_c or with a double delta QT_c approach.²⁴ The double delta QT_c is expressed as (QT_{c, baseline, treatment} – QT_{c, treatment}) – (QT_{c, baseline, placebo} – QT_{c, placebo}).

HR has been described at rest and during exercise in horses and humans.^{3,16,17,25} It is characterised in horses by adapting fast to a given workload and with a great variation at rest.^{3,26} Variability of PQ, QT and RR, expressed as the difference between the longest and shortest interval, at rest and after exercise has been described in Arabian horses.²⁷ Variability of PQ and RR was higher at rest

than after exercise. QT variability was not significantly different between the rest and after exercise. PQ and RR intervals were 2 times smaller after exercise, whereas QT was stable.²⁷ Investigation of the relationship between HR and ECG time intervals and the body weight (BWT) in horses showed a significant inverse relation between RR and BWT. Also, a significant positive relationship between PQ interval and BWT and QRS duration and BWT were found. The relation between QT and BWT was mainly derived from the QT/HR relationship.²⁸ One study suggested that a QT intervals with a short but normal QRS complexes had more “slack” within the reference-value before QT was considered prolonged.²⁹ It was suggested to use the JT interval instead of the QT interval, to accommodate this potential confounder, since pathological and pharmacological effects seemed restricted to this interval.³⁰ One study in humans showed a correlation between variability of QT and sudden death.³¹ However, knowledge about variability of QT and QT_c between and within horses or days is sparse.

Studies in humans and dogs have shown a diurnal pattern of the QT interval characterized by a prolonged QT interval, when sleeping and in the early morning hours.³²⁻³⁵ The diurnal QT-interval pattern in humans is related to the sympathovagal tonus during sleep and sympathetic activity during the day.^{32,33} Significant decrease of QT_c between two recording days suggested modest effect of accustoming to the research environment together with a lack of diurnal variation.³⁶ One study showed effect of administering atropine or propanolol suggesting that parasympathetic reactivation and withdrawal of sympathetic tonus had an influence on recovery of HR after exercise in horses.²⁶ This differed from what is found in humans, where the main contributor of HR recovery is thought to be parasympathetic reactivation. These findings suggest that horses have a different autonomic control of the cardiovascular system than humans.²⁶ Thus, diurnal variation could differ in horses from what is found in humans.

In order to develop the QT interval as a solid diagnostic and prognostic tool in horses more knowledge on the variability of QT_c is necessary. The objective of this study was to describe the diurnal variation of HR and QT_c and estimate contributing factors of variance in QT_c of healthy horses at rest.

2. Animals, materials and methods

24-hour three lead surface ECG with telemetric and Holter mode was performed from ultimo February 2013 until mid March 2013, as a cross-sectional study. The study was approved by the ethical committee, Department of Large Animal Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Denmark.

2.1 Animals

From 75 horses^a, 12 geldings were chosen based on the location in the stables, availability and health status. The horses were enrolled through a general clinical examination and thorough auscultation of the heart. One horse was excluded due to cardiac arrhythmia and replaced. All 12 horses included (6 – 22 years; mean 10.8 years) were in training and had no recent history of drug administration. Body mass (kg) was estimated ($\text{chest girth, cm}^2 \times (\text{body length, cm}) \div 11877^{37}$) (594 – 727 kg, mean 652 kg). The horses were riding horses of various breeds eight Danish Warmblood, two Oldenburger, one Dutch Warmblood and one Holsteiner. Six horses were recorded at a time due to recording capacity. No procedures were changed in the stable (feeding, cleaning, etc.) during the 24 hour study period. Lights were out between 22:00 and 05:00. Feeding was around 06:00, 14:00, 18:00 and 21:00. The horses were exercised and/or taken to the paddock in the morning, then kept in their loose box stalls until the recordings were finished the following day.

2.2 Preparation and recording

All horses were spot-clipped and degreased with alcohol to facilitate optimal contact with the four adhesive ECG electrodes^b. The reference electrode (black) was placed below the negative electrode on the right shoulder (red) (Fig. 2). The positive left arm (yellow) electrode is placed 2 hands above the *olecranon* at the mean electrical axis and the positive left leg (green) left to the ventral midline at the end of *m. pectoralis*.² The ECG electrodes were secured with adhesive foam before the cables were attached and covered with tape (Fig. 2). The cables and the ECG device^c were held in place by a grid. Stable 1 started recording at 12:00 on day 1, 7 and 14. Stable 2 started recording the following day at 13:00 hence their days are also considered 1, 7 and 14. At least one hour of rest was allowed after exercise, before the recordings began. This time was partly used to attach the ECG. Batteries were changed at midnight. Only the author handled the horses, electrodes and monitor system during the 24 hour study period. The ECGs were stored on SD cards and monitored

^a 3 mares and 72 geldings, Gardehusarregimentets hesteeskadron, Antvorskov kaserne, Slagelse, Denmark

^b ECG electrodes, Kruuse, Denmark

^c Televet 100, Roesch & Associates Information Engineering GmbH, Frankfurt am Main, Germany

and recorded on a laptop with ECG software^d. Hourly visual control of the screen monitor and the horses was made from 7:00 to 13:00, at 03:00 and at 05:00. Loose connections or damage to the equipment was corrected immediately. After 24 hours the electrodes, ECG device, cables and grid were removed.



FIGURE 2. ECG electrode, self adhesive foam, cable and placement on right shoulder (red and black).

2.3 ECG measurement

The ECG single lead II was measured manually by SBM with two on-screen calipers^e in ECG software^f at 40mm/mV and 50Hz.³⁸ First, HR was measured as an average over ten RR intervals at 10 mm/s. This was chosen as close to the full hour as possible, no more than 5 min. to either side. HR had to be stable (middle value \pm 4 bpm) and the ECG recording without 2nd degree AV-blocks, pre ventricular beats and background noise. Screenshots were saved from all RR interval measurements to facilitate control. QT, QT_{peak1} and QT_{peak2} were then measured at 200mm/s for five consecutive heart beats from the last average RR interval. The left end of the calliper was easily placed at the first true up stroke of the Q-wave. T_{peak1} and T_{peak2} were estimated at the most negative and positive point of the biphasic wave, respectively. T_{end} was estimated at the point where the down leg of the T-wave returns to baseline, considering background noise and shape of the wave (Fig. 3).³⁸ All HR, QT_{peak} and QT values were registered in a data management programme^g. If QT_{peak1} was not present the rubric was left blank. QT_{peak1} was not included in the further analysis, and QT_{peak} therefore refers to QT_{peak2}.

^d Televet 100, version 5.1.0 program, Roesch & Associates Information Engineering GmbH, Frankfurt am Main, Germany

^e Cardio Calipers 3.3 tool, ICONICO, New York, NY, USA

^f Televet 100, version 5.1.0 program, Roesch & Associates Information Engineering GmbH, Frankfurt am Main, Germany

^g Microsoft Office Excel 2007, Microsoft Corporation, Redmont, WA, USA

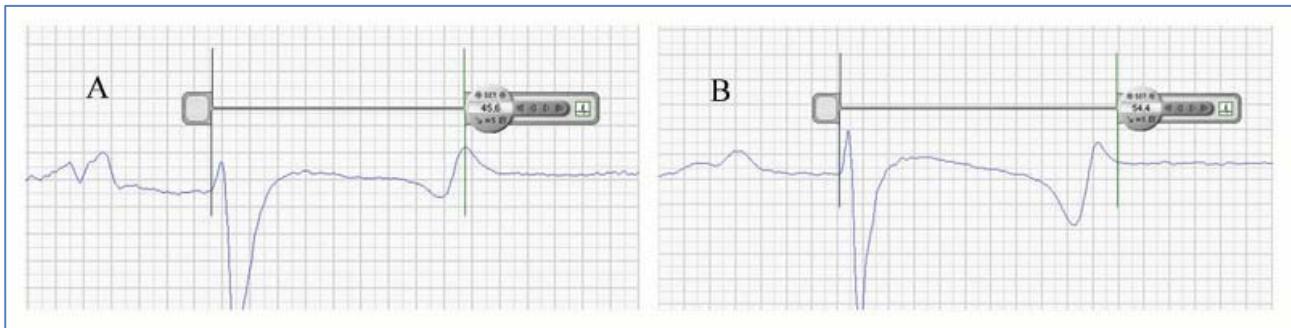


FIGURE 3. Placement of on-screen caliper measuring QT_{peak} (A) and QT (B).

2.4 Data analysis

All HR's were converted into RR intervals ($RR = 60/\text{HR}$). QT was corrected for HR by using the formula specific for geldings. The QT interval for the standard gelding was first calculated given the RR-interval for all data points:

$$QT_{\text{std}} = ((\text{slope}_{\text{bend}<0.8183} * \text{Bend} + b) + \text{slope}_{\text{bend}>0.8183} * (\text{RR} - \text{Bend})) * (\text{RR} > 0.8183) = \\ ((0.4501 * 0.8183 + 0.06148317) + 0.0726 * (\text{RR} - 0.8183)) * (\text{RR} > 0.8183)$$

The formula: $a + \text{slope}_{\text{bend}<0.8183}(x-\text{bend}) = y$, was reduced to isolate b (value of QT in bend = the y axis start value for $\text{slope}_{\text{bend}>0.8183}$). $B = 0,06148317$, $\text{bend}=0,8183$, $\text{slope}_{\text{bend}<0.8183}=0,4501$ and $\text{slope}_{\text{bend}>0.8183}=0,0726$. ($\text{RR} > 0.8183$) was a condition, making it possible to detect $\text{RR} < \text{bending point}$. In all cases the RR was above 0.8183.

The difference between the standard horse and the measured QT interval at the same HR was calculated and added to the $QT_{\text{std},60}$ to calculate QT_c .

$$QT_c = QT_{\text{std},60} + (QT - QT_{\text{std}}), \quad QT_{\text{std},60} = 0.4429913 \text{ (calculated by } QT_{\text{std}}, RR=1\text{)}$$

The five QT_c for each hour were averaged. $T_{\text{peak}}T_{\text{end}}$ was calculated for each measurement and averaged without correction.²¹

Data was expressed as mean \pm SD. Within all tests the level of statistical significance was 95% ($P = 0.05$). Graphic presentation and statistics were performed with suitable software^h. One-way ANOVA was used to estimate differences between time periods (12:00-21:00, 22:00-05:00 and 06:00-13:00) and HR, QT and QT_c , respectively. Bonferroni's multiple comparison test and Barlett's test for equal variance was used to compare means of time periods and difference in

^h GraphPad Prism v5.04 for Windows, GraphPad Software, Inc., San Diego, CA, USA.

variance between time periods, respectively. HR, RR, QT, QT_c, QT_{peak} and T_{peak}T_{end} were plotted against time for all horses all days (n=36). T_{peak}T_{end} was analysed with linear regression and tested against zero. Descriptive statistics of means were made pooling average values for all three days and 24 hours. PROC MIXED analysis of variance was run in statistical software,ⁱ modelling QT_c=day time (fixed effects), with no intercept (noint) and covariance parameters: horse, stable and horse*day. Repeated measures (time) with serial correlation was included, as AIC decreased by doing so. Stable*day, age and time*day were not significant and hence excluded (thorough statistical approach, see appendix I). Finally, QT_c was compared to Bazett's correction model⁷ (QT_{c,Bazett}, QT_c = QT/SQRT(RR)) by re-calculating all QT measures and plotted against the QT_c, derived from Pedersen *et al.*, 2013.²¹ A sample of the collected data set is available in appendix II together with the full dataset used for statistical analysis.

ⁱ SAS system version 9.2 for Windows, SAS Institute Inc., Cary, NC, USA.

3. Results

847 average QT_c values were calculated from 4251 QT intervals measured in 12 horses at 24 hour time points over three days. 17 full hours (1.97%) were either unavailable or of poor quality within the time-restriction.

Average values made from of 24 hour recordings are seen in table 1. For individual horses, RR explains between 0 – 55% of QT variation (Slope_{QT/RR} 0<R²<0.55). There is no significant difference between the slopes evening, night and day (P = 0.2882).

TABLE 1. Average values at rest over 24 hours.

	N	Mean	±SD	Range	Statistics
HR	847	34.82	±4.02	23.9 - 49.3	CL: 0.271 (95%) SE: 0.138 SV: 16.16
QT	847	517.17	±20.83	543 - 580	CL: 1.405 (95%) SE: 0.716 SV: 433.72
QT_c	847	462.98	±21.06	404 - 521	CL: 1.421 (95%) SE: 0.724 SV: 443.65
QT_{peak}	874	453.64	±19.56	401 - 516	CL: 1.319 (95%) SE: 0.672 SV: 382.57
T_{peak}T_{end}	874	63.54	±10.36	29.2 – 92.8	CL: 0.699 (95%) SE: 0.356 SV: 107.41
Slope_{QT/RR}		0.03464	±0.003328		R ² = 0.1136, P < 0.0001* CI: 0.02811 – 0.04116

CL: confidence level, SE: standard error of mean, SV: standard variation, CI: confidence interval, R²: goodness of fit, *significantly different from zero.

3.1 Diurnal pattern of HR, QT and QT_c

HR, RR, QT, QT_c, QT_{peak} and T_{peak}T_{end} for all horses are described in Fig. 4. The inverse relationship between HR and QT is demonstrated, and further confirmed by the RR and QT alignment. The variability of mean QT_c is reduced when correcting for HR as seen in Fig. 4C. As expected, T_{peak}T_{end} has no significant difference from zero (P = 0.1028). QT_{peak} pattern is similar to that of QT_c, confirming that the variation of QT is not found in the T_{peak}T_{end} interval. Large and similar standard deviations across time are observed in all plots, i.e. QT_{SD} ~ 40ms.

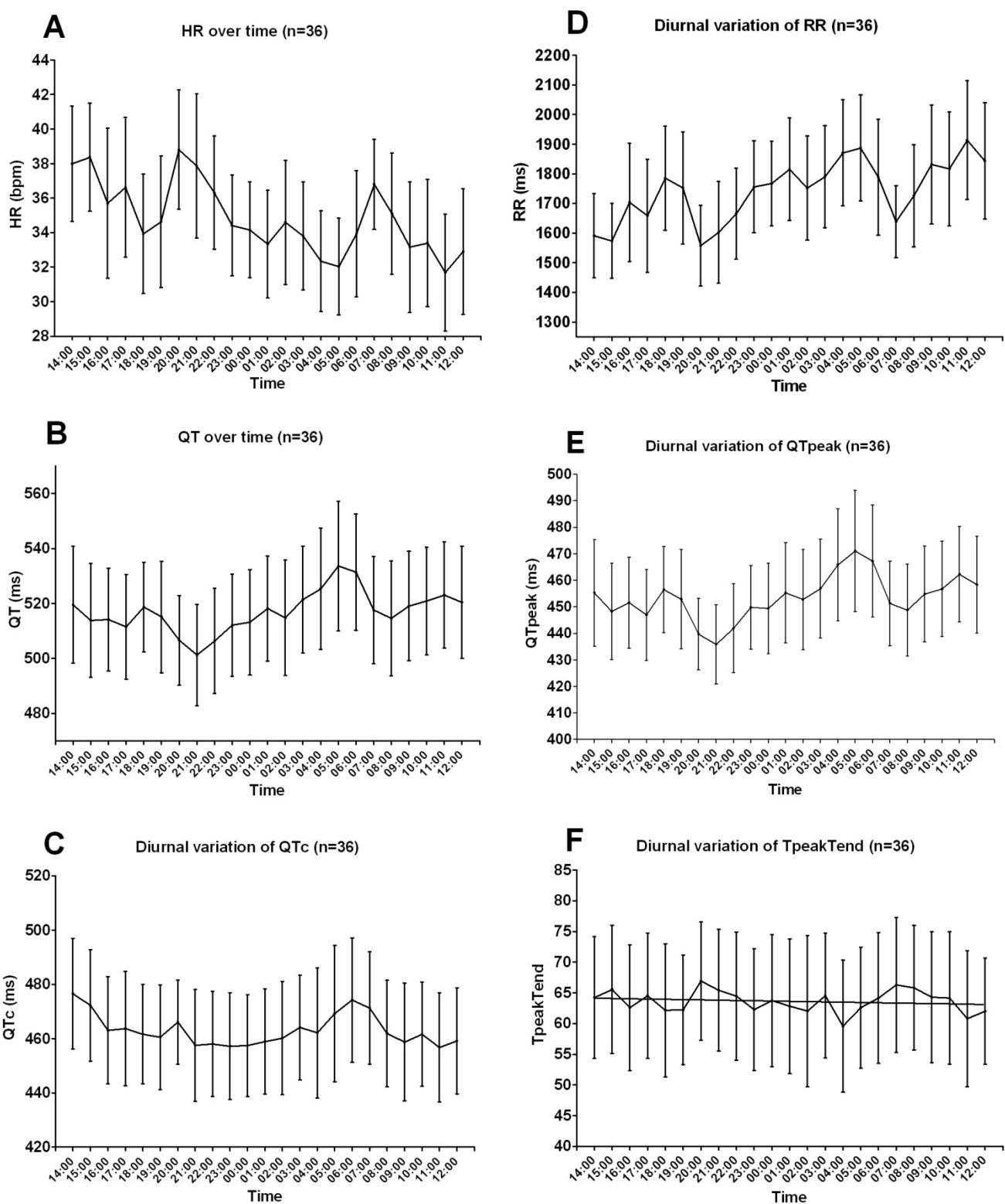


FIGURE 4: Mean of HR (A), RR (B), QT (C), QT_c(D), QT_{peak} (E) and T_{peak}T_{end} (F), linear regression P = 0.1028. Error bars: standard deviation.

The diurnal variability is visible in Fig. 5. The variance between time periods was significantly different for HR ($P = 0.0024$). The variance of QT and QT_c were not significantly different between time periods $P = 0.2571$ and 0.6673 , respectively. Plot of HR, QT and QT_c over 23 hours, allocated to day 1, 7 and 14 are visible in Fig. 6.

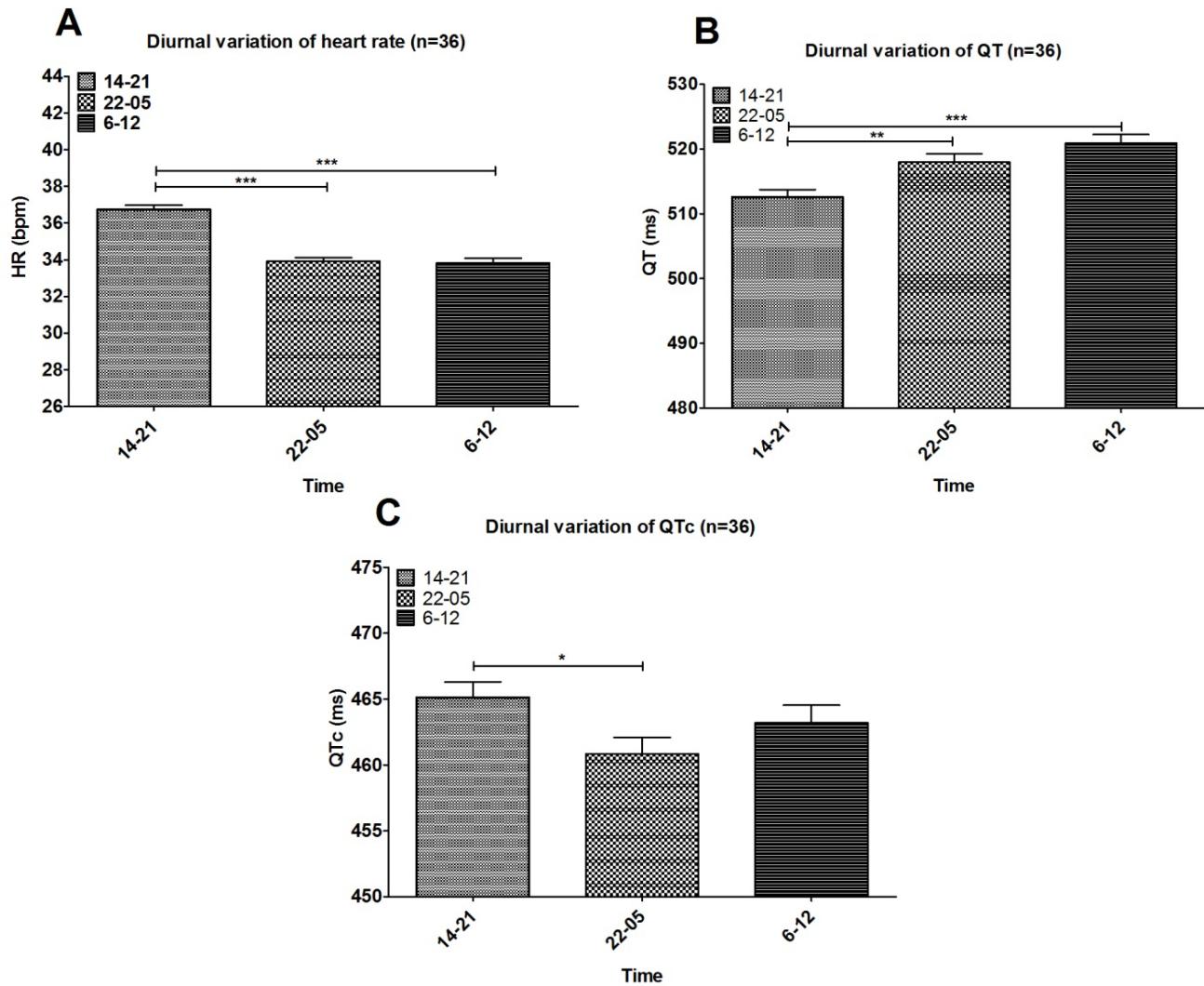


FIGURE 5. Diurnal variation of HR(A), QT(B) and QT_c(C) in three time intervals with standard deviations.

*Significant difference ($P < 0.0483$), **Significant difference ($P < 0.01$), ***Significant difference ($P < 0.001$).

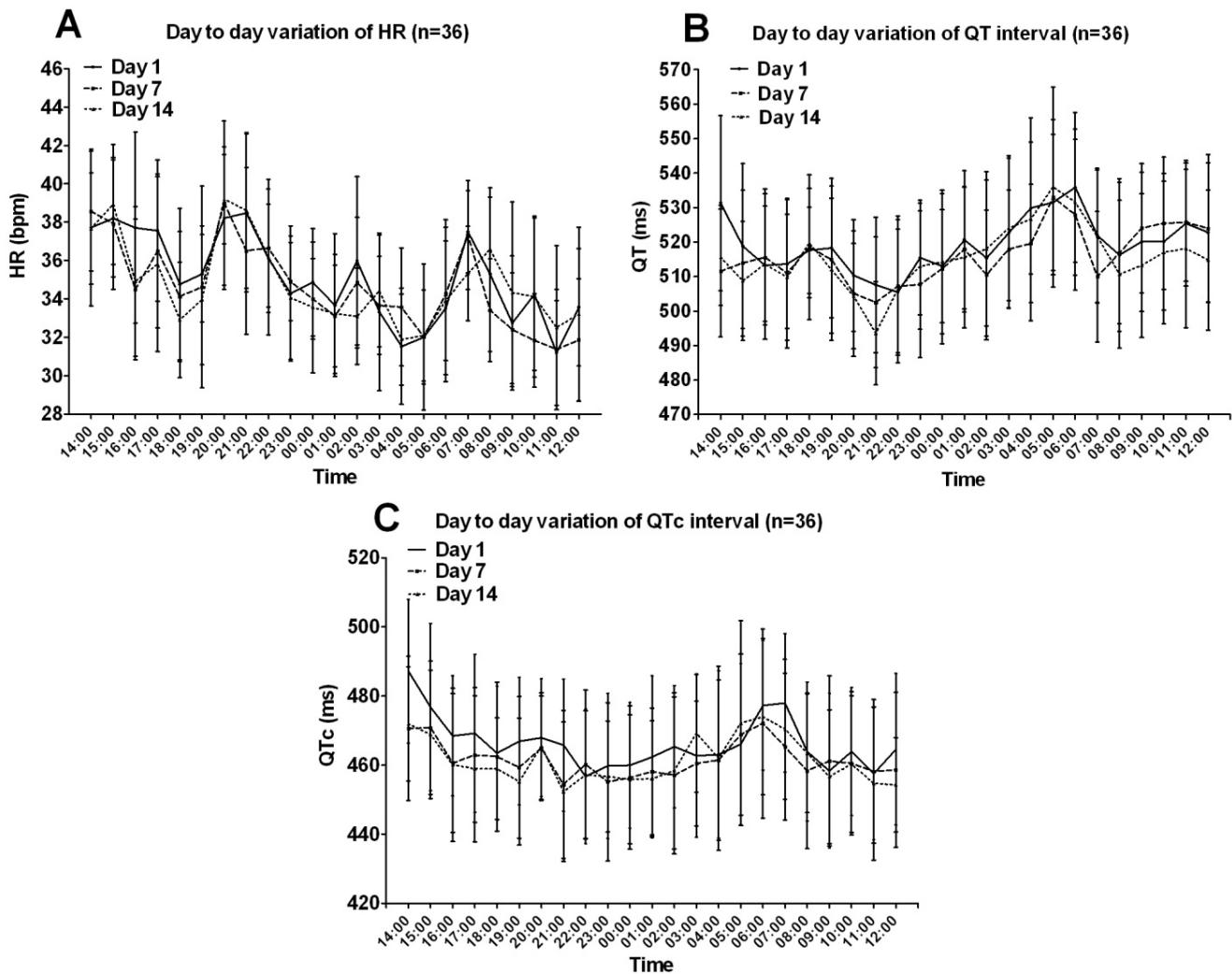


FIGURE 6. HR(A), QT(B) and QT_c(C) on day 1, 7 and 14 with standard deviations.

3.2 Variance of QT_c

The levels (intercepts) of individual curves vary from sample to sample. The total variance was given by 512.9 (horse*day + horse + stable + residual) of which 22.98 % could be explained as variation between stable 1 and 2. An additional fraction of the variance (55.21%) was due to variation between horses and the remaining part of the variance of the intercept (5.37%) had to do with day-to-day variation within the same horse (Table 2). Furthermore, serial correlation was present and interpreted as follows: the sum of variation from horse, stable and horse*day described the variance between levels (intercepts). The residual contributes to the total variance, but could be considered noise from measuring (16.43%). Time of day ($P < 0.0001$) and day ($P = 0.0007$) had a significant fixed effect on QT_c. Solutions for fixed effects are presented in table 3. The effect of stable is demonstrated in Fig. 7.

TABLE 2. Contribution to variance for covariance parameter.**AIC: 6258.1**

	Estimate (%)
Horse	283.19 (55.21%)
Stable	117.87 (22.98%)
Repeat Horse*day	27.5505 (5.37%)
Residual	84.2903 (16.43%)
Total variance	512.9

TABLE 3. Solution for fixed effects. Estimates of QT_c for day 3.

Effect	Estimate QT _c	± SE	CI	
			lower	upper
13:00	479.94	12.1983	433.85	526.03
14:00	486.17	12.1085	438.90	533.43
15:00	481.75	12.1120	434.51	528.99
16:00	472.65	12.1085	425.39	519.91
17:00	473.30	12.1085	426.03	520.56
18:00	471.23	12.1085	423.96	518.49
19:00	470.09	12.1085	422.83	517.35
20:00	475.70	12.1085	428.44	522.96
21:00	467.10	12.1085	419.83	514.36
22:00	467.65	12.1085	420.39	514.91
23:00	466.79	12.1085	419.53	514.06
00:00	466.35	12.1124	419.12	513.58
01:00	467.68	12.1117	420.45	514.91
02:00	469.97	12.1145	422.76	517.18
03:00	473.28	12.1189	426.10	520.45
04:00	470.87	12.1118	423.64	518.09
05:00	478.77	12.1137	431.57	525.98
06:00	482.83	12.1165	435.65	530.00
07:00	480.24	12.1150	433.05	527.43
08:00	471.50	12.1085	424.24	518.76
09:00	468.33	12.1085	421.07	515.60
10:00	471.18	12.1085	423.91	518.44
11:00	466.37	12.1085	419.10	513.63
12:00	468.74	12.1106	421.51	515.98
13:00	462.06	12.2542	415.65	508.48
Day 1*	462.06 + 6.3992	1.5610**	3.1947**	9.6038**
Day 2*	462.06 + 1.0673	1.5605**	-2.1376**	9.6038**

SE: standard error, CI: confidence interval. For time = 13:00 6 horses were available for analysis at each point. * Day 1 and 2 were given as day 3 + estimation. **only regarding the deviation estimate and significant deviation from day 3.

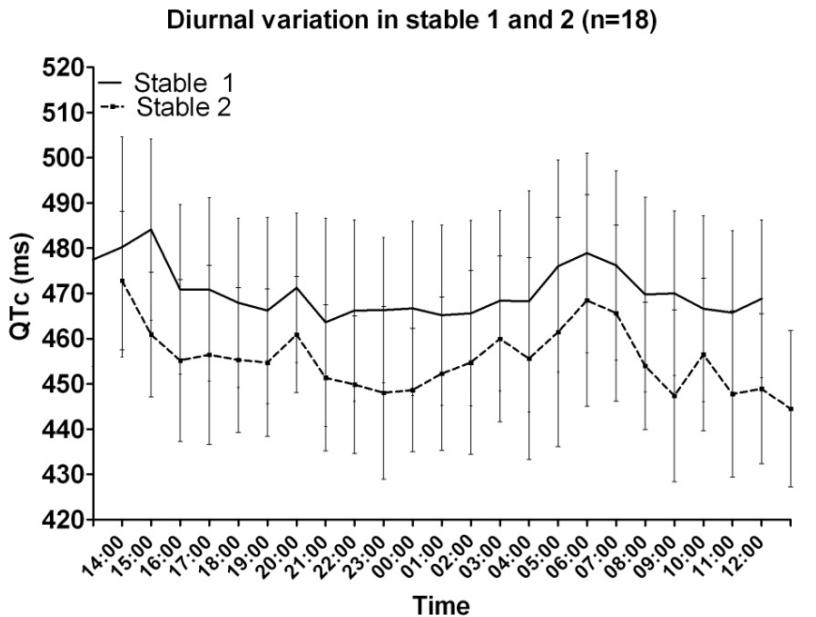


FIGURE 7. Diurnal variation of QT_c in stable 1 and 2. Error bars: standard deviation, P = 0.05.

3.3 Correction method

Plotting QT_c and QT_{c,Bazett}, the two models had a very similar appearance. However the QT_c was elevated from QT_{c,Bazett} by 70-80ms (Fig. 8).

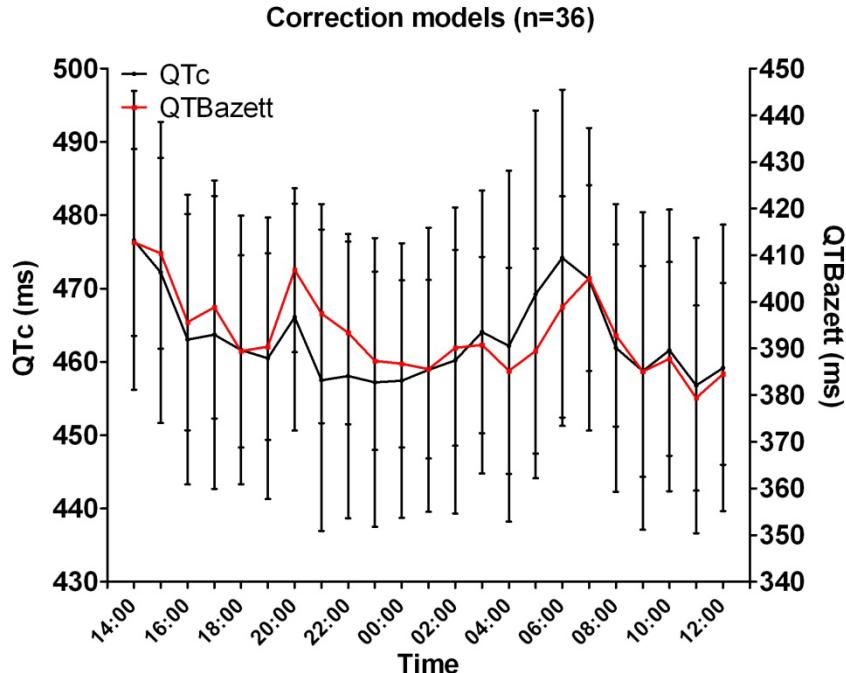


FIGURE 8. Mean and standard deviations of QT corrected for heart rate by equine specific model (linear regression) and Bazett's correction formula.

3.4 T wave morphology

The different types of T waves found during the measuring of the ECG are presented in Fig. 9.

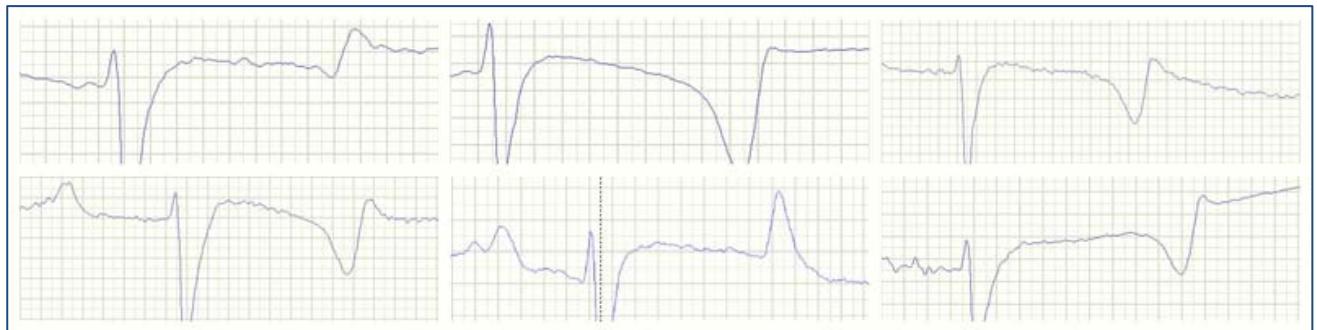


FIGURE 9. Display of different T wave morphologies from ECG, lead II in different horses. Variation in width of the T wave, noise, baseline level after T and the biphasic vs. one phase (positive or negative) are represented.

4. Discussion

In this study, 24 hour ECG recording contained multiple challenges in order to obtain high quality and valid data. Battery change or correction of electrodes was necessary, but disturbed the horses especially at night. This was kept at a minimum, and preferably done outside the 10 minute period around the whole hour. Two horses were taken out of their box stalls on day 7, two hours before the end of the recording. The data was not excluded from the data-set, as the horses were back in their box stalls before the next full hour and they did not leave the stable. Two different stables were used to include 12 horses in the study. Even though the personnel and the routines were the same, a time difference between the feeding, cleaning and routines was present. By pooling all 12 horses, these effects would be more spread over time. There seems to be two general peaks at 20:00 – 22:00 and 06:00 – 08:00. These corresponded with two major feeding times, where the anticipation and restlessness in the stables were obvious. The data included runs from 14:00 to 12:00, since the hours in which only 6 horses were recorded were excluded. Thus, it is not surprising that the level of HR and QT_c do not return to starting level. Furthermore, the two mornings of each day were very different, one being with exercise/paddock and set-up of equipment, the other without any intervention if possible. Leaving the recorder on for 48 hours would give a full 24 hour interval, where the effects of pre-study-period could be diminished. One could allow normal routines (paddock, exercise etc.) while recording. This could provide useful information about the effect of exercise on resting ECG, transition periods and the sympathovagal tone could be estimated.

Inter- and intra-observer agreements were not performed for this study. It has been proven that first-time readers can achieve good alignment with relative short introduction and training.²¹ The author was trained and achieved further experience by analysing a pilot study and a drug-induced LQTS study, thus a stable skill level is assumed.

4.1 Reference values

The range of HR in resting horses has been reported between 31-138bpm³ and 30-55bpm¹⁶. The HR range (23.9bpm - 49.3bpm) found in this study is representative of a calm horse at rest, without arrhythmias across 24 hour within a stable period of ECG. Reference value in horses for QT intervals is $\leq 0.58\text{s}^2$ or given for HR intervals.^{1,21} In this study it has been given as a total average over the resting HR range. The average QT interval ($517.17\text{ms} \pm 20.83$) found in this study was within the reference values reported. Since the HR dependency determines the QT interval these should be matched with the reference values of HR 30pbm, 40bpm and 50bpm.²¹ This has not been performed due to time restrictions.

4.2 Diurnal variation

The HR was expected to rise in the morning due to reactivation of sympathetic tonus and parasympathetic withdrawal.¹ However, there was no significant difference between night and morning. This might be due to the data collection, where only stable HR periods were chosen. The significantly higher HR found in the evening could be a result of the study set-up, morning exercise and stress from the new conditions. Dawn of light is thought to increase the sympathetic tone thereby shortening QT_c.³³ However, a tendency of increased QT_c in the morning was observed. Sympathetic activity has been associated with shortening of QT_c values compared to night.³² At significantly higher HR in the evening, this study found QT_c significantly higher than at night. Multiple factors could have affected these results. The Slope_{QT/RR} found in this study varies from that of Pedersen *et al.*, 2013. However, the slope of Pedersen *et al.*, 2013 has been modelled to fit the high HR curve. Furthermore, the sampling of the two studies was under very different circumstances. The difference between Slope_{QT/RR} and the one used for QT correction²¹ could create a false correction of QT_c at low HR. This is a potential systematic error relevant for QT_c. Another reason for the unexpected results could be that the horses were interrupted in the night for check-up or stressed by the equipment. Consequently, false low QT_c values could have been achieved. However, it was not reflected in the HR averages. Furthermore, the different sleeping pattern of horses could have resulted in a higher sympathetic tone at night than humans and dogs. This would explain the lack of increase in QT_c at night, but not why QT_c was high in the evening, when stress was supposedly peaking.

Given the narrow HR range, the significantly equal Slope_{QT/RR} of evening, night and morning correspond with previous results reported in humans.³⁹ Considering the results found in this study, QT_c dependence within the resting (parasympathetic) reference range should be further investigated. A single hour analysis would provide a more accurate view of Slope_{QT/RR} changes over time.

4.3 Variance of QT_c

A modest effect of age on diurnal variation has been showed in humans.⁴⁰ The results showed that age did not contribute to the variance of QT_c in adult horses and was left out of the PROC MIXED model. The effect of stable (22.98%) can be difficult to take into account in larger studies. It remains unclear, whether it was the time difference between routines in the two stables or the horses in the stable affecting each other that caused the between stable variation. The difference in QT_c between day 1, 7 and 14 was significantly longer for day 1 ($P = 0.0003$). This suggests that the

assumption of day as a fixed effect was correct. Decrease of QT_c following two day ECG recordings in humans has suggested adaption to protocol.³⁶ The results suggest an adaption to influence from the ECG equipment, opposite of what is found in humans.

The between horse and day to day (within horse) variation found in this study suggest that the double delta approach is suitable in horses. This approach only relates one horse to its own baseline and placebo against treatment. The difference from baseline should correct if the mean of a horse is elevated or decreased on a following day. Time matched set-up with random treatment and placebo should be made because of the significant fixed effect of time in the model. This could originate from different routines in the stable (feeding, cleaning etc.) and the night/day influence. A separate placebo and treatment group is unsuitable because of the between horse variance (55.21%). Cross-over study design must be considered the first choice for drug-induced LQTS trials. However attempts to take these factors into account in a drug-induced LQTS cross-over study (not published) still showed a very large variation, making the effect of acepromazine non-significant. Possible explanation of these results could lie within the remaining residual (16.43%) found. The residual is considered uncertainty of measure. This could be intra-observer variability, which was not estimated in either of the two studies. However, intra-observer variability has previously been shown to be low.²¹ Beside its known HR dependency, some degree of individuality in relation to T wave morphology was observed while measuring QT_{peak} . The T wave was not only shifting between phases, the baseline also seems to be fluctuating and thereby prolonging the down leg of the T wave. Subtle noise could force inaccurate estimation of the point of intersect with baseline. Even without noise, the long and exponential shape of the down leg made it hard to accurately determine the end of the T wave.

The positive control in thorough QT study requires high sensitivity of the study setup. A great natural variance will make the sample size required to find 5ms of increase is very large. This is costly and time consuming. With the large variation found in this study, it is possible that such small difference is impossible to prove in horses, because the natural variation exceeds the difference in QT_c . The threshold of cardiac risk might not be clinically relevant in horses; perhaps the cut-off value is much higher than that of humans. This could be reasonable, considering the I_{Kur} which is suggested to give the equine cardiomyocytes a reserve repolarisation potential.

4.4 Limitations

The average values presented in this study should only be used in direct comparison with healthy resting horses, without restriction to feeding and heavy exercise before the recording. QT_{peak} include measures of a broad variety of T wave morphologies. This should be considered, before direct comparison is made to other reference values. The T_{peak} wave must be measured at the last, positive peak of T before returning to baseline. This also accounts for $T_{peak}T_{end}$. Only geldings are included in the study, although difference between genders has been shown to affect QT/RR.^{21,39}

5. Conclusion

Average values of HR, QT, QT_c , QT_{peak} and $T_{peak}T_{end}$ over 24 hours in healthy resting warmblood sports horses has been presented (Table 1).

HR, QT and QT_c all had large variance of means, equal across 23 hours. HR average was significant higher in the evening (14:00-21:00) compared to night (22:00-05:00) and evening to morning (06:00-12:00). QT_c average was significantly higher in the evening compared to night ($P < 0.0483$). Simultaneously high HR and high QT_c in the evening, where the stress is assumed to be most pronounced was unexpected. These results are different from what has been reported in humans. Sleeping pattern or cardiac sympathovagal dependence in horses might explain the results. No significant difference was found between Slope_{QT/RR} time periods. The difference between Slope_{QT/RR} found in this study and the one used for the correction model could have introduced a systematic bias, influencing QT_c . The QT_c dependence of sympathovagal tone in the equine heart must be further investigated to establish its origin and implication.

Sources of QT_c variance are 55.21% between horses, 22.98% between stables, 5.37% day-to-day (within horse) and 16.43% residuals. Time and day had significantly systematic fixed effect. The difference in QT_c between day 1, 7 and 14 was significantly longer for day 1 ($P = 0.0003$), and adaption to the study design is suggested. Sources of QT_c variance must be taken into account in thorough QT studies. Cross-over study design is recommended for this purpose, using double delta values to evaluate drug-induced LQTS. Limits of detection for significant effect in horses should be further investigated together with estimating a clinically relevant cut-off value. The residual should be minimized by investigating its originality and possible prevention i.e. implication of the T wave morphology and baseline.

6. Conflict of interest

None.

7. Acknowledgment

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9. Further considerations

9.1 Pilot study

Four hospital teaching horses were signed up for two 24 hours Holter ECG, 7 days apart. By the end of the study three horses had double data-sets available for analysis. Evaluation to determine critical points regarding quality, loss of data and practical issues was made. Major issues were the reliability of the Holter monitor and the battery, keeping the ECG electrodes on the pads (especially during night time), a stable environment and registering all interventions and procedures in the stable (feeding, paddock, cleaning etc.). The ECG recordings were used as training of measuring with on-screen callipers, to reach a reasonable level of experience by the author. This also gave the opportunity to optimize the procedures of measuring considerably.

9.2 Drug-induced LQTS

As part of the Equine Cardiac Group's work, moxifloxacin was tested in three healthy horses. This was to test if the study design could prove a 5 ms prolongation of QT_c and show drug-induced LQTS in horses.¹ Data is unpublished as the findings were not significant ($P = 0.05$), but did show a tendency of prolongation after administration 5.8mg/kg BWT moxifloxacin, P.O. (Charlotte Andersson, Master's Thesis, 2013). Moxifloxacin had not shown a significant inhibition of KCNH2. The data of QT_c showed a large variation, which seemed to be the main reason for the insignificant result. Acepromazine was chosen for a new drug-induced LQTS study. This was based on the inhibition of KCNH2 channel (ventricular repolarisation, K⁺) in a two-electrode-voltage-clamp study (Emma Olander, Master's Thesis, 2012). Therefore, acepromazine could potentially induce a more pronounced prolongation of QT detectable by the study design. A cross-over, randomized study was performed in four horses with IV injection of 0.1mg/kg BWT acepromazine maleate. The same protocol was followed as the moxifloxacin study. Blood samples were drawn from a venous catheter at 0, 5, 10, 15, 20, 25, 30, 45, 60, 120, 180 and 240 minutes. These have not yet been analysed. The results of ΔΔQT_c showed a great variation and no significant increase was found, since all time points included 10ms in the upper 95% CI. Once again, there is a tendency of prolongation at maximal sedative effect, see Fig. 10.²

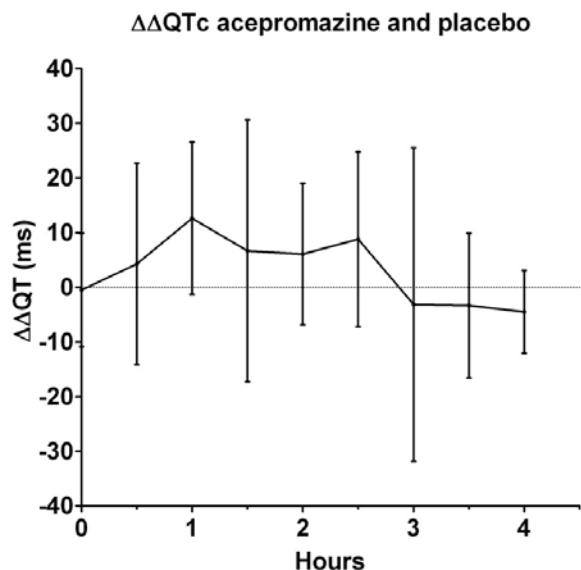


FIGURE 10. $\Delta\Delta QT_c$ for drug-induced LQTS. Error bars: SD.

The drug-induced LQTS studies generated the first ideas for which sources of variation that might contribute to the large deviation of data. The results of the article showed that many of the factors were already accounted for in the study design. Improvement could still be made, especially regarding daily routines. However, many questions remain i.e. why the variation of QT_c is so large and what implications large variability between horses has for equine cardiology.

9.3 Morphology of the T wave

The T waves' individual behaviour is obvious, when ECG is analysed. Fig. A shows a quick overview of number of biphasic T waves related to age of the horse and average HR . There is no apparent connection between the parameters. It seems one horse has approximately the same level of biphasic waves from day to day, supporting the theory that it is of individual nature (Table A). Whether the T wave morphology or one horse's individual appearance has any association to risk of sudden death is not yet described.

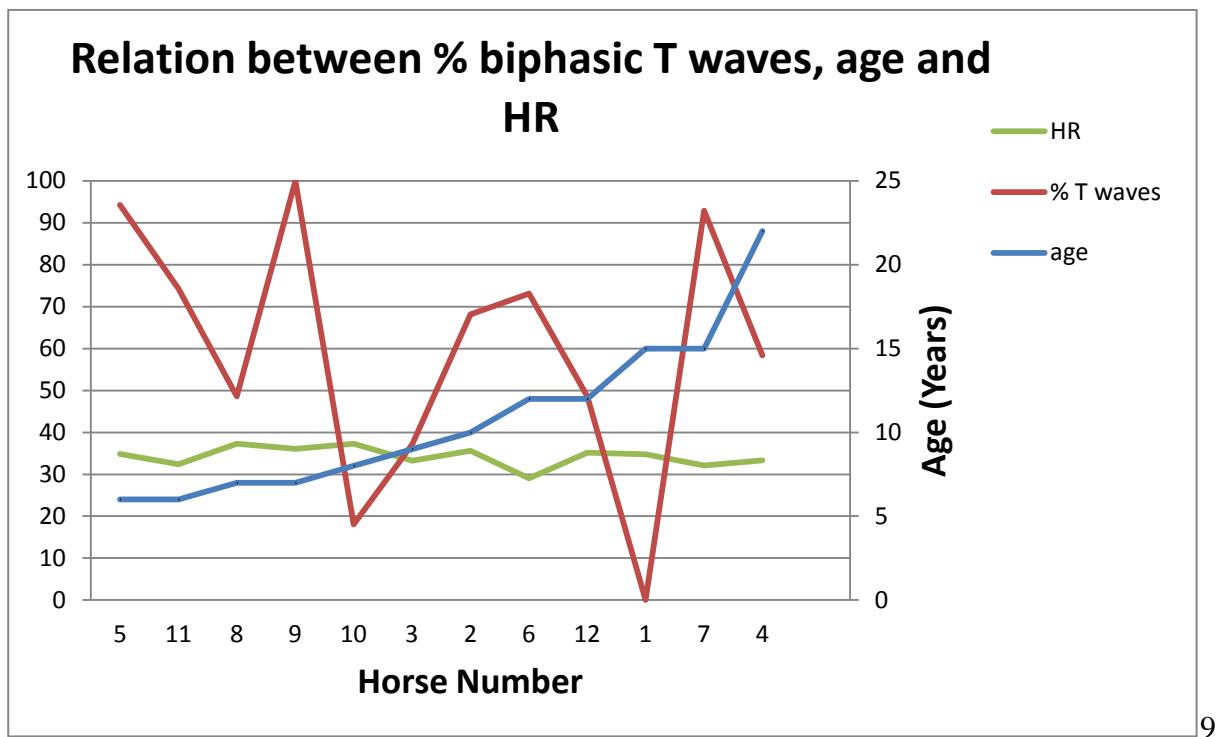


FIGURE A. Average HR for each horse and % biphasic T waves of total number within each horse, plotted against increasing age of horses.

Table A. Number of biphasic T waves for individual horses. Average %T wave biphasic and HR across 3 days averages for 24 hours.

Horse (Number)	Age (Years)	Day 1	Day 2	Day 3	Total number of T waves	% biphasic T waves	HR (average)
5	6	20	23	23	70	94	34.82
11	6	19	15	18	70	74	32.44
8	7	9	10	16	72	49	37.33
9	7	24	24	24	72	100	36.07
10	8	1	5	7	72	18	37.26
3	9	11	10	5	70	37	33.28
2	10	17	16	14	69	68	35.64
6	12	15	22	12	67	73	29.01
12	12	12	7	16	72	49	35.14
1	15	0	0	0	72	0	34.75
7	15	20	22	23	70	93	32.11
4	22	12	12	18	72	58	33.29

9.4 Conclusion

The sympathovagal influence on the heart is a truly complex system.³⁻⁸ Great individuality of QT_c was shown in this study. Given the large variation between horses, two questions become essential to the further work with equine ECG. Are horses sensitive to QT prolongation in the same way

humans are? Do we have to look for other reasons to explain the cases of sudden death? The I_{kur} has been suggested to give the ventricles an additional repolarisation potential.⁹ Compared to humans this makes horses theoretical less vulnerable to LQTS. It has still not been possible to show that horses are susceptible to drug-induced LQTS. Moreover, the results of the article were puzzling, as QT_c did not follow to HR and stress as expected. It might be that the HR range was too narrow or the correction method had truly biased the results. However, it is possible that a different perhaps more sensitive HR/stress dependency of QT_c in the equine heart exists.

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Appendix I

SAS code

All possible parameters were first included in the model, including repeated measures and intercept. The goal was to achieve the simplest model, containing all relevant data available with the lowest possible AIC score.

Time was expressed as 0 – 24, to accommodate the way data was obtained (13:00 was present two times at each end of the data set). Non significant parameters were excluded one at a time, as their p-values were below 0.05. This was true for fixed effect: age and timex*day. Covariance parameters = 0 were also excluded true for Stable*day, since AIC was the same with and without the parameter. Horsenumb and stable were included as “`random`” since it was not known beforehand.

A residual “noint;” was inserted instead of: “`residual solution cl outpm=estimates`”. This is due to the expectation that individual horses are parallel to each other and do not share a common point. The assumption did not increase AIC, and was thus accepted.

Finally, “`Parms`” was added which decreased AIC. “`Parms`” assumes a serial correlation, and describes the effect one parameter has on the next within a series. Time was included as a repeated measure, since this describes the way data was obtained well. This was also implemented into the final model:

```
title 'with repeat timex parms 1';
ods html;
ods graphics on;
proc mixed data=sasuser.sasdatasine;
class Horseno day timex;
model AvgQTcms= tidx day/ddfm=satterth alpha=0.05 residual noint
outpm=estimates;
random Horseno stable;
repeated / type=sp(gau)(timex) subject=Horseno*day local;Parms 300 100 20 1 100;
run;
ods html close;
```

Appendix II

An example of the original spreadsheet is given here.

See attached Excel file for full data set.

Horse																			
Age	Day	Hour	Gender, 2=gelding	ECG time	RR	HR	QTpeak 1	QTpeak 2	Avg QT	Qtsek	QT	QTc	Standard horse RR >0,8021	Avg QT (ms)	Avg QTc	Avg QTc (ms)	Avg Qtpeak	Tptend avg	
9																			
Remus	22	1	2	13:00	13:00:11	34,20	1,75												
Remus	22	1	2	13:00	13:00:29	34,20	1,75	1754,39	384	435	505	0,505	0,4968	496,8	0,49776	0,450231	0,442031	442,0315	0,4316 0,07 0,0652
Remus	22	1	2	13:00	13:00:31	34,20	1,75		383	431	498	0,498			0,49776	0,443231			0,067
Remus	22	1	2	13:00	13:00:33	34,20	1,75		376	428	485	0,485			0,49776	0,430231			0,057
Remus	22	1	2	13:00	13:00:35	34,20	1,75		384	428	503	0,503			0,49776	0,448231			0,075
Remus	22	1	2	13:00	13:00:37	34,20	1,75		389	436	493	0,493			0,49776	0,438231			0,057
Remus	22	1	2	14:00	14:02:05	42,90	1,40												
Remus	22	1	2	14:00	14:02:20	42,90	1,40	1398,60	372	428	493	0,493	0,5026	502,6	0,47193	0,464061	0,473661	473,6614	0,4306 0,065 0,072
Remus	22	1	2	14:00	14:02:22	42,90	1,40		379	428	500	0,5			0,47193	0,471061			0,072
Remus	22	1	2	14:00	14:02:24	42,90	1,40		379	431	503	0,503			0,47193	0,474061			0,072
Remus	22	1	2	14:00	14:02:25	42,90	1,40		381	433	505	0,505			0,47193	0,476061			0,072
Remus	22	1	2	14:00	14:02:26	42,90	1,40		38	433	512	0,512			0,47193	0,483061			0,079
Remus	22	1	2	15:00	15:02:10	39,60	1,52												
Remus	22	1	2	15:00	15:02:26	39,60	1,52	1515,15	379	428	492	0,492	0,493	493	0,480391	0,4546	0,4556	455,5999	0,428 0,064 0,065
Remus	22	1	2	15:00	15:02:27	39,60	1,52		378	424	490	0,49			0,480391	0,4526			0,066
Remus	22	1	2	15:00	15:02:29	39,60	1,52		378	430	493	0,493			0,480391	0,4556			0,063
Remus	22	1	2	15:00	15:02:30	39,60	1,52		376	430	492	0,492			0,480391	0,4546			0,062
Remus	22	1	2	15:00	15:02:32	39,60	1,52		381	428	498	0,498			0,480391	0,4606			0,07

Horse	No	Stable	Age	Day	Gender	QTgain	QTfeed	HRfeed	Time	timex	tidscopy	No	EKGtime	HR	RR	RRms	QTpeak1	Qtpeak2	QT	Qts	AvgQT	AvgQTms	StandardhorseRR>0.8021	QTC	AvgQTC	AvgQTcms	AvgQtpeak	AvgQtpeakms	Tptend	Tptdavg	TpTendavg(ms)	Bazett
Daggert	1	2	15	1	2	40	200	10	14:00:19	39,20,1530,61		1	1	446	527	0,527	0,5208	520,8	0,481513869	0,488477431	0,482,777431	0,445	0,081	0,0758	75,8	0,083181729						
Daggert	1	2	15	1	2	40	200	10	15:00:22	2,1	1	14:57:57	40,80,1,47	1470,59	428	508	0,508	0,5082	508,2	0,477156126	0,473835174	0,474,0351741	0,4272	0,08	0,081	81	0,079561796					
Daggert	1	2	15	1	2	40	200	10	16:00:33	3	3	1	15:59:09	38,90,1,54	1542,42	426	512	0,512	0,5128	512,8	0,482370854	0,472620446	0,473420446	0,426	0,086	0,0868	86,8	0,082219194				
Daggert	1	2	15	1	2	40	200	10	17:00:44	4	4	1	17:00:51	37,90,1,58	1583,11	428	520	0,52	0,5176	517,6	0,485325457	0,477665843	0,475,2658431	0,4304	0,092	0,0872	87,2	0,084076507				
Daggert	1	2	15	1	2	40	200	10	18:00:55	5	5	1	17:59:23	38,80,1,58	1578,95	438	515	0,515	0,5236	523,6	0,485022999	0,472968301	0,481568301	0,4336	0,077	0,09	90	0,084939136				
Daggert	1	2	15	1	2	40	200	10	19:00:66	6	6	1	18:59:29	37,30,1,61	1608,58	458	529	0,529	0,5182	518,2	0,487174262	0,484817038	0,474,0170382	0,4556	0,071	0,0626	62,6	0,08484827				
Daggert	1	2	15	1	2	40	200	10	20:00:77	7	7	1	20:00:43	38,20,1,57	1570,68	424	513	0,513	0,5096	509,6	0,484422834	0,471568466	0,468168466	0,4266	0,089	0,083	83	0,082451344				
Daggert	1	2	15	1	2	40	200	10	21:00:88	8	8	1	20:59:44	41,80,1,44	1435,41	414	502	0,502	0,505	505	0,474601946	0,470389354	0,473389354	0,4154	0,088	0,0896	89,6	0,078109388				
Daggert	1	2	15	1	2	40	200	10	22:00:99	9	9	1	22:01:04	38,80,1,55	1554,40	409	471	0,471	0,4832	483,2	0,483241161	0,430750139	0,442,9501391	0,4126	0,062	0,0705	70,6	0,077773792				
Daggert	1	2	15	1	2	40	200	10	23:00:10	10	10	1	22:59:53	32,78,1,83	1834,86	441	522	0,522	0,5134	513,4	0,503620424	0,461388871	0,452,7888708	0,4416	0,081	0,0718	71,8	0,089780493				
Daggert	1	2	15	1	2	40	200	10	00:00:11	11	11	1	23:56:48	35,50,1,70	1699,72	433	503	0,503	0,4998	499,8	0,493790853	0,452200447	0,449000447	0,4332	0,07	0,0666	66,6	0,084121866				
Daggert	1	2	15	1	2	40	200	10	01:00:12	12	12	1	01:00:01	31,60,1,90	1898,73	448	520	0,52	0,5222	522,2	0,508239521	0,454751779	0,456951779	0,4492	0,072	0,073	73	0,092895211				
Daggert	1	2	15	1	2	40	200	10	02:00:13	13	13	1	02:00:28	37,70,1,59	1591,51	436	518	0,518	0,5248	524,8	0,486935187	0,475056113	0,481856113	0,4386	0,082	0,0862	86,2	0,085471859				
Daggert	1	2	15	1	2	40	200	10	03:00:14	14	14	1	02:57:03	31,90,1,88	1880,88	448	508	0,508	0,522	522	0,506934144	0,440404816	0,458048156	0,4486	0,06	0,0734	73,4	0,09241957				
Daggert	1	2	15	1	2	40	200	10	04:00:15	15	15	1	04:00:02	30,39,1,97	1967,21	460	512	0,512	0,5188	518,8	0,504011052	0,450980248	0,457780248	0,4614	0,052	0,0574	57,4	0,090863857				
Daggert	1	2	15	1	2	40	200	10	05:00:16	16	16	1	05:00:20	30,39,1,97	1967,21	470	532	0,532	0,5336	533,6	0,513211092	0,461780208	0,463,3802079	0,4684	0,062	0,0652	65,2	0,096619748				
Daggert	1	2	15	1	2	40	200	10	06:00:17	17	17	1	06:00:03	31,90,1,90	1904,76	482	554	0,554	0,5532	553,2	0,508677134	0,488314166	0,487514166	0,483	0,072	0,0702	70,2	0,098565946				
Daggert	1	2	15	1	2	40	200	10	07:00:18	18	18	1	07:00:01	38,60,1,55	1554,40	445	517	0,517	0,5138	513,8	0,483241161	0,476750139	0,473,5501391	0,4436	0,072	0,0702	70,2	0,082699036				
Daggert	1	2	15	1	2	40	200	10	08:00:19	19	19	1	08:00:12	38,80,1,55	1546,39	421	495	0,495	0,5012	501,2	0,482659461	0,455331839	0,461531839	0,4216	0,074	0,0796	79,6	0,080462811				
Daggert	1	2	15	1	2	40	200	10	09:00:20	20	20	1	09:00:13	35,10,1,71	1714,29	436	510	0,51	0,5052	505,2	0,494848563	0,458123737	0,453,34273	0,4334	0,074	0,0718	71,8	0,085394386				
Daggert	1	2	15	1	2	40	200	10	10:00:21	21	21	1	10:00:13	31,90,1,88	1880,88	451	535	0,535	0,5356	535,6	0,506934144	0,471048156	0,471,6481559	0,4526	0,084	0,083	83	0,094829886				
Daggert	1	2	15	1	2	40	200	10	11:00:22	22	22	1	10:59:58	32,80,1,83	1829,27	466	518	0,518	0,5294	529,4	0,503196298	0,457795002	0,461951902	0,465	0,052	0,0644	64,4	0,09243725				
Daggert	1	2	15	1	2	40	200	10	12:00:23	23	23	1	12:01:33	38,90,1,58	1578,95	445	510	0,510	0,5124	512,4	0,485022999	0,467968301	0,470,3683011	0,442	0,065	0,0704	70,4	0,08312256				
Daggert	1	2	15	1	2	40	200	10	13:00:24	24	24	1	13:01:39	34,10,1,70	1759,53	465	544	0,544	0,5320	539	0,498133355	0,488857945	0,483,857945	0,4624	0,079	0,0766	76,6	0,092302099				
Daggert	1	2	15	1	2	40	200	10	14:00:25	1	1	1	14:01:13	41,40,1,45	1449,28	438	507	0,507	0,5158	515,8	0,474382489	0,483,128489	0,483,128489	0,4376	0,069	0,0782	78,2	0,08016433				
Daggert	1	2	15	1	2	40	200	10	15:00:26	2	2	1	15:00:03	34,50,1,74	1739,13	461	530	0,53	0,5356	535,6	0,49665229	0,476339001	0,481,33901	0,4556	0,069	0,079	79	0,0911866				
Daggert	1	2	15	1	2	40	200	10	16:00:27	3	3	1	16:00:57	34,20,1,75	1754,39	456	539	0,539	0,5354	535,4	0,497759841	0,480231459	0,480,631459	0,4556	0,083	0,0794	79,4	0,091551468				
Daggert	1	2	15	1	2	40	200	10	17:00:28	4	4	1	17:00:37	38,30,1,57	1566,58	448	523	0,523	0,5236	523,6	0,484125101	0,481866199	0,482,466199	0,4486	0,078	0,075	75	0,084065822				
Daggert	1	2	15	1	2	40	200	10	18:00:29	5	5	1	17:59:34	34,60,1,73	1734,10	446	535	0,535	0,5354	535,4	0,496873734	0,486703427	0,479,103926	0,4586	0,084	0,0738	73,8	0,0905010715				
Daggert	1	2	15	1	2	40	200	10	19:00:30	6	6	1	18:59:18	35,50,1,69	1690,14	460	520	0,52	0,5262	526,2	0,501202231	0,463789069	0,464,989069	0,4516	0,071	0,0716	71,6	0,090666243				
Daggert	1	2	15	1	2	40	200	10	20:00:31	7	7	1	20:59:51	33,80,1,78	1775,15	449	500	0,505	0,5054	505,4	0,479759841	0,48266739	0,485,2667388	0,467	0,067	0,0712	71,2	0,09136481				
Daggert	1	2	15	1	2	40	200	10	21:00:32	8	8	1	21:00:22	38,90,1,55	1554,40	426	502	0,502	0,5098	509,8	0,483534277	0,461657023	0,469,2570229	0,43	0,076	0,0798	79,8	0,082161709				
Daggert	1	2	15	1	2	40	200	10	22:00:33	9	9	1	22:01:29	38,80,1,54	1542,42	436	523	0,523	0,5208	520,8	0,497759807	0,468231459	0,466,6310459	0,4388	0,087	0,082	82	0,089054921				
Daggert	1	2	15	1	2	40	200	10	23:00:34	10	10	1	20:09:17	31,93,1,93	1929,26	451	535	0,535	0,5354	535,4	0,510455729	0,467935571	0,467,9355711	0,4508	0,084	0,0846	84,6	0,096005955				
Daggert	1	2	15	1	2	40	200	10	24:00:35	11	11	1	20:00:13	30,90,1,94	1941,75	458	532	0,532	0,5224	524,2	0,505917535	0,4658873765	0,452,2375038	0,4564	0,077	0,0648	64,8	0,089196642				
Daggert	1	2	15	1	2	40	200	10	19:00:36	12	12	1	01:02:29	30,90,1,94	1941,75	448	523	0,523	0,5212	521,2	0,514153796	0,45533901	0,462,1390104	0,4372	0,076	0,0786	76,6	0,087815624				
Daggert	1	2	15	1	2	40	200	10	09:00:37	13	13	1	02:01:31	32,80,1,86	1857,59	450	5															

Horse	No	Stable	Age	Day	Gender	QTgain	QTfeed	HRfeed	Time	timex	tidscopy	No	EKGtime	HR	RR	RRms	QTpeak1	Qtpeak2	QT	Qts	AvgQT	AvgQTms	StandardhorseRR>0.8021	QTC	AvgQTc	AvgQTcms	AvgQtpeak	AvgQtpeakms	Tptend	Tptendavg	TpTendavg(ms)	Bazett
Malakoff	2	2	7	1	2	40	200	10	22:00	9	9	1	22:02:24	35,10	1,7	1709,40	424	466	517	0,517	50,094	0,494493984	0,465497316	0,457897316	457,8973159	0,465	0,051	0,0444	44,4	0,085981572		
Malakoff	2	2	7	1	2	40	200	10	23:00	10	10	1	22:59:56	32,20	1,81	1807,23	431	478	527	0,527	50,5306	0,501596239	0,468395061	0,471995061	0,479590607	0,4756	0,049	0,055	55	0,092086974		
Malakoff	2	2	7	1	2	40	200	10	01:00	12	1	01:01:23	34,30	1,75	1749,27	458	466	513	0,513	50,5144	0,506943144	0,449048156	0,449048156	0,450448156	0,4852	0,047	0,0292	29,2	0,09107635			
Malakoff	2	2	7	1	2	40	200	10	02:00	13	13	1	02:02:24	36,10	1,66	1662,05	438	483	530	0,53	50,5302	0,5302	0,49105624	0,48193506	0,48213506	482,1350601	0,481	0,047	0,0492	49,2	0,08824419	
Malakoff	2	2	7	1	2	40	200	10	03:00	14	14	1	03:01:15	33,40	1,80	1796,41	441	492	549	0,549	50,553	0,500810582	0,491180718	0,495180718	0,489	0,057	0,064	64	0,095686771			
Malakoff	2	2	7	1	2	40	200	10	04:00	15	15	1	04:01:45	30,30	1,98	1980,20	456	503	557	0,557	50,5584	0,514153796	0,485837504	0,487237504	0,5038	0,054	0,0546	54,6	0,10144347			
Malakoff	2	2	7	1	2	40	200	10	07:00	18	18	1	06:58:41	38,90	1,54	1542,42	421	470	525	0,525	50,5324	0,5324	0,482370854	0,485620446	0,493020446	493,0204456	0,4716	0,055	0,0608	60,8	0,085361737	
Malakoff	2	2	7	1	2	40	200	10	08:00	19	19	1	07:55:33	36,15	1,65	1652,89	455	507	507	0,507	50,515	0,49039142	0,45959988	0,46759988	467,59988	0,4528	0,052	0,0622	62,2	0,085477914		
Malakoff	2	2	7	1	2	40	200	10	09:00	20	20	1	09:01:29	32,50	1,84	1846,15	440	480	539	0,539	50,5312	0,5312	0,490422189	0,477599111	0,467961111	467,9611108	0,4792	0,059	0,052	52	0,093178644	
Malakoff	2	2	7	1	2	40	200	10	10:00	21	21	1	10:01:51	38,10	1,57	1574,80	451	510	530	0,53	50,5252	0,5252	0,484722129	0,488269171	0,483469171	483,4691713	0,4524	0,079	0,0728	72,8	0,085086808	
Malakoff	2	2	7	1	2	40	200	10	11:00	22	22	1	11:03:47	32,20	1,86	1863,35	471	539	539	0,539	50,5352	0,5352	0,505670923	0,476320377	0,472520377	472,5203769	0,47	0,070	0,0652	65,2	0,094316607	
Malakoff	2	2	7	1	2	40	200	10	12:00	23	23	1	12:01:23	34,20	1,75	1754,39	448	517	517	0,517	50,518	0,497759841	0,462231459	0,463231459	463,2314589	0,4498	0,069	0,0682	68,2	0,088576131		
Malakoff	2	2	7	1	2	40	200	10	13:00	24	24	1	13:01:02	28,00	2,14	214,86	436	482	537	0,537	50,5412	0,5412	0,525962849	0,454028451	0,458228451	458,2284514	0,4826	0,055	0,0586	58,6	0,102271786	
Malakoff	2	2	7	2	2	40	200	10	14:00	1	1	13:59:22	43,00	1,40	1395,35	460	520	520	0,52	50,5214	0,5214	0,471693746	0,491297554	0,492697554	492,6975544	0,4598	0,06	0,0616	61,6	0,079512755		
Malakoff	2	2	7	2	2	40	200	10	15:00	2	2	1	15:00:51	41,94	1,45	1452,78	440	498	498	0,498	50,5026	0,5026	0,475863575	0,465127725	0,469727725	469,727725	0,441	0,058	0,0616	61,6	0,07820733	
Malakoff	2	2	7	2	2	40	200	10	16:00	3	3	1	15:59:12	42,30	1,42	1418,44	406	448	500	0,50	50,5064	0,5064	0,473370143	0,469621157	0,462011557	462,0115566	0,4516	0,052	0,0548	54,8	0,077861634	
Malakoff	2	2	7	2	2	40	200	10	17:00	4	4	1	17:00:40	43,50	1,38	1379,31	428	492	492	0,492	50,4894	0,4894	0,470529351	0,464641949	0,461861949	461,861949	0,424	0,064	0,0654	65,4	0,074202637	
Malakoff	2	2	7	2	2	40	200	10	18:00	5	5	1	18:01:23	37,00	1,62	1621,62	403	445	508	0,508	50,499	0,499	0,48812115	0,46287015	0,45387015	453,8701503	0,4458	0,063	0,0532	53,2	0,082035095	
Malakoff	2	2	7	2	2	40	200	10	19:00	6	6	1	19:02:07	48,30	1,24	1242,24	414	490	490	0,49	50,4832	0,4832	0,460577755	0,472413545	0,465,613544	465,613544	0,4148	0,076	0,0684	68,4	0,069526979	
Malakoff	2	2	7	2	2	40	200	10	20:00	7	7	1	20:00:34	39,40	1,22	1721,04	413	471	471	0,471	50,4786	0,4786	0,458748418	0,455224882	0,462,84828	462,84828	0,4148	0,058	0,0638	63,8	0,068163084	
Malakoff	2	2	7	2	2	40	200	10	21:00	8	8	1	20:59:58	47,20	1,27	1271,19	409	468	468	0,468	50,473	0,473	0,462679556	0,448311744	0,453117444	453,117444	0,4092	0,059	0,0638	63,8	0,068847812	
Malakoff	2	2	7	2	2	40	200	10	22:00	9	9	1	22:00:41	37,84	1,61	1608,58	396	441	502	0,502	50,498	0,498	0,487170382	0,458710382	0,4398	0,4398	0,061	0,0582	58,2	0,081540792		
Malakoff	2	2	7	2	2	40	200	10	23:00	10	10	1	23:00:35	38,28	1,67	1570,68	406	445	512	0,512	50,507	507	0,484422834	0,470568466	0,456,568466	456,568466	0,4446	0,067	0,0624	62,4	0,082030674	
Malakoff	2	2	7	2	2	40	200	10	00:00	11	11	1	00:00:56	34,90	1,72	1719,20	416	460	520	0,52	50,5172	0,5172	0,495205174	0,452786126	0,460,386126	460,3861264	0,4552	0,06	0,062	62	0,087547914	
Malakoff	2	2	7	2	2	40	200	10	01:00	12	12	1	01:00:58	34,90	1,72	1719,20	411	460	505	0,505	50,5126	0,5126	0,495205174	0,452786126	0,460,386126	460,3861264	0,4612	0,045	0,0514	51,4	0,086769259	
Malakoff	2	2	7	2	2	40	200	10	02:00	13	13	1	02:02:01	41,80	1,44	1435,41	443	515	515	0,515	50,511	511	0,474601946	0,48383954	0,479,3893537	479,3893537	0,4432	0,072	0,0678	67,8	0,079037421	
Malakoff	2	2	7	2	2	40	200	10	03:00	14	14	1	03:59:45	34,90	1,74	1719,33	406	450	517	0,517	50,5118	0,5118	0,49665229	0,46333901	0,45813901	458,13901	0,4528	0,067	0,059	59	0,087134618	
Malakoff	2	2	7	2	2	40	200	10	04:00	15	15	1	03:59:58	36,30	1,66	1657,66	414	461	515	0,515	50,5116	511,6	0,490722912	0,467,268388	0,463,688388	463,6883883	0,4616	0,054	0,05	50	0,085030797	
Malakoff	2	2	7	2	2	40	200	10	05:00	16	16	1	04:59:36	35,90	1,69	1690,14	423	471	513	0,513	50,5134	0,5134	0,493095645	0,483895655	0,484495655	484,495565	0,4718	0,063	0,0628	62,8	0,089572521	
Malakoff	2	2	7	2	2	40	200	10	06:00	17	17	1	06:00:59	32,90	1,82	1823,71	409	455	503	0,503	50,5134	513,4	0,498866995	0,471043035	0,457,5043045	457,5043048	0,4574	0,047	0,0433	43,6	0,089593117	
Malakoff	2	2	7	3	2	40	200	10	07:00	18	18	1	07:00:50	32,90	1,82	1840,49	421	471	508	0,508	50,5136	513,6	0,504011052	0,449689248	0,456,292481	456,292481	0,4754	0,047	0,0433	43,6	0,088177141	
Malakoff	2	2	7	3	2	40	200	10	08:00	19	19	1	08:00:59	35,90	1,82	1839,75	424	468	515	0,518	50,5224	522,4	0,50651642	0,454,474488	0,485,874488	485,874488	0,4654	0,057	0,057	57	0,092348146	
Malakoff	2	2	7	3	2	40	200	10	09:00	20	20	1	09:00:28	42,00	1,43	1428,57	448	523	523	0,508	50,5084	508,4	0,474105706	0,491885594	0,477,285594	477,285594	0,448	0,075	0,0604	60,4	0,078447823	
Malakoff	2	2	7	3	2	40	200	10	10:00	21	21	1	10:01:16	42,90	1,40	1398,60	440	487	534	0,534	50,5342	534,2	0,505670923	0,477,32077	0,447,7203769	447,7203769	0,478	0,065	0,0			

Horse	No	Stable	Age	Day	Gender	QTgain	QTfeed	HRfeed	Time	timex	tidxcopy	No	EKGtime	HR	RR	Rrms	QTpeak1	Qtpeak2	QT	Qts	AvgQT	AvgQTms	StandardhorseRR>0.8021	QCt	AvgQCt	AvgQTcms	AvgQtpeak	AvgQtpeakms	Tptend	Tptendavg	TpTendavg(ms)	Bazett
Golan	3	2	12	1	2	40	200	10	09:00	20	20	1	09:04:51	30,90	1,94	1941,75	446	498	0,498	0,5076	507,6	0,511362294	0,429629006	0,429629006	439,2290062	0,4518	451,8	0,052	0,0558	55,8	0,091315053	
Golan	3	2	12	1	2	40	200	10	10:00	21	21	1	10:03:16	31,30	1,81	1821,69	453	520	0,52	0,5122	512,2	0,501998268	0,460998672	0,451986715	452,2	0,067	0,06	60	0,089027787			
Golan	3	2	12	1	2	40	200	10	11:00	22	22	1	11:00:09	29,10	2,06	2061,86	431	470	523	0,523	521,6	0,520082142	0,445909158	0,444509158	445,5091584	0,469	469	0,053	0,0526	52,6	0,096692121	
Golan	3	2	12	1	2	40	200	10	12:00	23	23	1	12:04:12	30,60	1,96	1960,78	460	520	0,523	0,5212	521,2	0,512744361	0,453246939	0,451446939	451,4469388	0,4602	460,2	0,063	0,061	61	0,094220129	
Golan	3	2	12	1	2	40	200	10	13:00	24	24	1	12:59:47	27,10	2,21	2214,02	430	468	527	0,527	5358	535,8	0,53112947	0,438861873	0,447661873	447,6618726	0,4748	474,8	0,059	0,061	61	0,102924334
Golan	3	2	12	2	2	40	200	10	14:00	1	1	1	14:02:57	35,10	1,71	1709,40	443	495	0,495	0,5014	501,4	0,494439384	0,443497316	0,448987316	449,8973159	0,4434	443,4	0,052	0,058	58	0,084631253	
Golan	3	2	12	2	2	40	200	10	15:00	2	2	1	14:59:49	32,90	1,82	1823,71	419	458	517	0,517	516	516	0,502792636	0,457198664	0,456198664	456,1986642	0,46	460	0,059	0,056	56	0,089690478
Golan	3	2	12	2	2	40	200	10	16:00	3	3	1	16:00:05	34,40	1,74	1744,19	458	523	0,523	0,5164	516,4	0,497019327	0,468971973	0,462371973	462,371973	0,456	456	0,065	0,0604	60,4	0,088045469	
Golan	3	2	12	2	2	40	200	10	17:00	4	4	1	16:59:55	39,00	1,54	1538,46	421	482	0,482	0,4908	490,8	0,482083728	0,442907572	0,451707572	451,707572	0,4258	425,8	0,061	0,065	65	0,078590898	
Golan	3	2	12	2	2	40	200	10	18:00	5	5	1	18:02:20	32,70	1,83	1834,86	450	508	0,508	0,5084	508,4	0,503620429	0,447388871	0,447788871	447,7888078	0,45	450	0,058	0,0584	58,4	0,088906122	
Golan	3	2	12	2	2	40	200	10	19:00	6	6	1	19:00:56	32,90	1,82	1823,71	460	518	0,518	0,5132	513,2	0,502792636	0,458198664	0,453398664	453,3986642	0,4574	457,4	0,058	0,0558	55,8	0,08947232	
Golan	3	2	12	2	2	40	200	10	20:00	7	7	1	20:00:26	36,40	1,65	1648,35	441	507	0,507	0,5098	509,8	0,49006175	0,45992955	0,46272955	462,7295503	0,442	442	0,066	0,0678	67,8	0,084498527	
Golan	3	2	12	2	2	40	200	10	21:00	8	8	1	20:59:32	32,20	1,86	1863,35	445	500	0,5	0,5052	505,2	0,505670923	0,437320377	0,442520377	442,5203769	0,4432	443,2	0,055	0,062	62	0,089029802	
Golan	3	2	12	2	2	40	200	10	22:00	9	9	1	22:01:11	34,10	1,76	1759,53	445	507	0,507	0,4994	499,4	0,498133355	0,451857945	0,444257945	444,257945	0,4426	442,6	0,062	0,0568	56,8	0,08552072	
Golan	3	2	12	2	2	40	200	10	23:00	10	10	1	22:57:53	31,90	1,91	1910,83	411	450	503	0,503	503,2	503,2	0,509117535	0,436863765	0,437073765	437,0737654	0,4526	452,6	0,053	0,0506	50,6	0,087999891
Golan	3	2	12	2	2	40	200	10	00:00	11	11	1	23:59:59	32,80	1,86	1857,59	406	446	529	0,527	530,8	503,2	0,505252101	0,447391991	0,448319199	448,3191989	0,4442	444,2	0,047	0,0562	56,2	0,088047299
Golan	3	2	12	2	2	40	200	10	01:00	12	12	1	00:59:54	32,95	1,85	1846,15	418	458	513	0,513	514,6	504,4	0,504422189	0,451569111	0,453169111	453,1691108	0,4556	456,6	0,055	0,058	58	0,090266811
Golan	3	2	12	2	2	40	200	10	02:00	13	14	1	03:02:33	32,90	2,01	2006,69	413	471	520	0,52	528	510,7	0,516077039	0,446914261	0,454914261	454,9142613	0,4676	467,6	0,049	0,0604	60,4	0,096560238
Golan	3	2	12	2	2	40	200	10	04:00	15	15	1	04:01:13	34,30	1,75	1749,27	413	461	532	0,532	522,6	522,6	0,497388505	0,477602795	0,468202795	468,2027955	0,4604	460,4	0,071	0,0622	62,2	0,089232353
Golan	3	2	12	2	2	40	200	10	05:00	16	16	1	04:56:12	29,70	2,02	2020,20	443	485	540	0,54	538,8	538,8	0,517058087	0,465933213	0,467433213	464,7332133	0,484	484	0,055	0,0548	54,8	0,098665456
Golan	3	2	12	2	2	40	200	10	06:00	17	17	1	06:01:46	34,30	1,77	1769,51	443	478	539	0,539	547,4	547,4	0,498886995	0,483104305	0,491504305	491,5043048	0,4892	489,2	0,052	0,0582	58,2	0,094016687
Golan	3	2	12	2	2	40	200	10	07:00	18	18	1	07:03:57	32,80	1,84	1840,49	443	505	505	0,505	508,4	504,0	0,504100110	0,443980248	0,447380248	447,3802481	0,447	447	0,052	0,0614	61,4	0,089042376
Golan	3	2	12	2	2	40	200	10	08:00	19	19	1	08:03:11	31,90	1,90	1898,73	406	466	527	0,527	530,8	503,0	0,508239521	0,461751797	0,465551779	465,5517778	0,468	468	0,061	0,0628	62,8	0,094425082
Golan	3	2	12	2	2	40	200	10	09:00	20	20	1	09:03:12	30,10	1,99	1933,96	436	475	545	0,545	532,2	522,2	0,515109028	0,447288272	0,446082272	446,0822724	0,4744	474,4	0,07	0,0578	57,8	0,097004442
Golan	3	2	12	2	2	40	200	10	10:00	21	21	1	10:04:46	30,80	1,95	1948,05	413	488	540	0,54	536,4	518,1	0,518119991	0,471173109	0,4675173109	467,51731086	0,4736	473,6	0,057	0,0628	62,8	0,096562571
Golan	3	2	12	2	2	40	200	10	11:00	22	22	1	11:02:48	31,10	1,93	1929,26	451	488	544	0,544	539,4	539,4	0,510455729	0,476355751	0,471935571	471,9355713	0,488	488	0,056	0,0514	51,4	0,09672322
Golan	3	2	12	2	2	40	200	10	12:00	24	24	1	12:58:55	29,00	2,07	2068,97	438	473	534	0,534	531,6	531,6	0,520598317	0,45399283	0,453992834	453,992834	0,4756	475,6	0,061	0,056	56	0,098715642
Golan	3	2	12	2	2	40	200	10	13:00	25	25	1	13:01:38	37,60	1,60	1955,74	457	527	527	0,5282	528,2	528,2	0,486242484	0,483748816	0,484948816	484,948816	0,4736	473,6	0,052	0,0546	54,6	0,086139222
Golan	3	2	12	2	2	40	200	10	14:00	26	26	1	14:01:22	36,90	1,63	1626,02	443	488	540	0,508	513	513	0,488440242	0,462511511	0,462511511	462,5115109	0,4528	452,8	0,06	0,0602	60,2	0,084450881
Golan	3	2	12	2	2	40	200	10	15:00	27	27	1	15:01:27	35,16	1,69	1638,39	393	435	493	0,493	497,6	497,6	0,505670923	0,443032777	0,443290377	443,2903769	0,4408	440,8	0,058	0,0568	56,8	0,087690478
Golan	3	2	12	2	2	40	200	10	16:00	28	28	1	16:01:00	32,30	1,86	1857,59	409	430	473	0,502	496,2	496,2	0,507804669	0,437186631	0,431386631	431,3866308	0,4486	448,6	0,049	0,0476	47,6	0,088130682
Golan	3	2	12	2	2	40	200	10	17:00	29	29	1	17:01:07	32,80	1,86	1857,59	409	430	495	0,495	503	503	0,505252101	0,432739199	0,440739199	440,7391994	0,4426	442,6	0,052	0,0604	60,4	0,088504779
Golan	3	2	12	2	2	40	200	10	18:00	30	30	1	18:01:02	31,90	1,88	1886,88	409	430	518	0,518	508,2	508,2	0,507804669	0,447186631	0,440186631	440,1866308	0,4534	453,4	0,057	0,0516	51,6	0,089693666
Golan	3	2	12	2	2	40	200	10																								

Horse	No	Stable	Age	Day	Gender	QTgain	QTfeed	HRfeed	Time	timex	tidxcopy	No	EKGtime	HR	RR	RRms	QTpeak1	Qtpeak2	QT	Qts	AvgQT	AvgQTms	StandardhorseRR>0.8021	QC	AvgQC	AvgQTcms	AvgQTpeak	AvgQtpeakms	Tptend	Tptendavg	TpTendavg(ms)	Bazett
Missil	4	2	7	2	2	40	200	10	19:00	6	1	19:01:04	34,40	1,76	1744,19		448	512	0,512	0,5078	507,8	0,497019327	0,457971973	0,45771973	453,771973	0,4492	449,2	0,064	0,0586	58,6	0,086579181	
Missil	4	2	7	2	2	40	200	10	20:00	7	1	20:02:06	41,70	1,44	1438,85		431	498	0,498	0,4894	489,4	0,474851852	0,466139448	0,457599448	539,5394483	0,4306	430,6	0,067	0,0588	58,8	0,075787213	
Missil	4	2	7	2	2	40	200	10	21:00	8	1	20:59:54	36,30	1,65	1652,89		446	490	0,49	0,5002	500,2	0,49039142	0,44259988	0,45279988	452,79988	0,4474	447,4	0,044	0,0528	52,8	0,083021462	
Missil	4	2	7	2	2	40	200	10	22:00	9	1	21:59:19	37,00	1,62	1621,62		441	512	0,512	0,5068	506,8	0,49812115	0,46687015	0,4617015	461,6701503	0,4424	442,4	0,071	0,0644	64,4	0,083317407	
Missil	4	2	7	2	2	40	200	10	23:00	10	1	23:02:12	36,60	1,64	1639,34	411	446	495	0,495	0,4966	496,6	0,489407813	0,448583487	0,450183487	450,1834866	0,4472	447,2	0,049	0,0494	49,4	0,082085448	
Missil	4	2	7	2	2	40	200	10	00:00	11	1	00:04:39	34,20	1,75	1754,39		451	534	0,534	0,5192	519,2	0,497759841	0,479231459	0,464431459	464,4314589	0,4464	446,4	0,083	0,0728	72,8	0,088781327	
Missil	4	2	7	2	2	40	200	10	01:00	12	1	01:02:51	31,00	1,94	1935,48	421	456	518	0,518	0,514	514	0,510907549	0,450083751	0,446083751	446,083751	0,4524	452,4	0,062	0,0616	61,6	0,092317125	
Missil	4	2	7	2	2	40	200	10	02:00	13	1	02:00:41	32,70	1,83	1834,86	421	458	510	0,51	0,5118	511,8	0,503602429	0,449388871	0,451188871	451,1888708	0,4612	461,2	0,052	0,0506	50,6	0,089500694	
Missil	4	2	7	2	2	40	200	10	03:00	14	14	1	02:59:33	33,50	1,79	1791,04		448	515	0,515	0,5168	516,8	0,500421271	0,457570029	0,459370029	459,3700293	0,4462	446,2	0,067	0,0707	70,6	0,08928944
Missil	4	2	7	2	2	40	200	10	04:00	15	15	1	03:59:14	29,80	2,01	2013,42	426	458	527	0,527	0,5318	531,8	0,5166565917	0,453425383	0,452253833	452,253834	0,4646	464	0,069	0,0678	67,8	0,097418222
Missil	4	2	7	2	2	40	200	10	05:00	16	16	1	05:00:58	31,40	1,91	1910,83	426	465	535	0,535	0,531	531	0,505117535	0,468873765	0,464873765	464,8737654	0,4656	465,6	0,07	0,0654	65,4	0,094761014
Missil	4	2	7	2	2	40	200	10	06:00	17	17	1	05:56:16	32,00	1,88	1875,00	440	475	540	0,54	0,5282	528,2	0,50651642	0,476747488	0,46927488	469,27488	0,4734	473,4	0,065	0,0594	59,4	0,094186623
Missil	4	2	7	2	2	40	200	10	07:00	18	18	1	07:00:05	40,60	1,48	1477,83		431	490	0,49	0,4934	493,4	0,47768206	0,45530924	0,458709224	458,7092396	0,4312	431,2	0,059	0,0622	62,2	0,077434791
Missil	4	2	7	2	2	40	200	10	08:00	19	19	1	07:59:29	25,50	2,03	2033,90	428	463	527	0,527	0,523	523	0,518052437	0,451938863	0,447938863	447,9388631	0,4646	464	0,064	0,059	59	0,096291205
Missil	4	2	7	2	2	40	200	10	09:00	20	20	1	09:00:14	30,50	1,97	1657,21		465	527	0,527	0,5322	532,2	0,513211092	0,456780208	0,461980208	461,9802079	0,4632	463,2	0,062	0,069	69	0,096366248
Missil	4	2	7	2	2	40	200	10	10:00	21	21	1	10:01:12	29,98	2,05	2047,78	441	477	532	0,532	0,5418	541,8	0,519060362	0,455930938	0,465730938	465,730938	0,477	477	0,055	0,0648	64,8	0,100093342
Missil	4	2	7	2	2	40	200	10	11:00	22	22	1	11:00:33	28,80	2,08	2033,83	443	477	540	0,54	0,5376	537,6	0,516164142	0,46134988	0,45894988	458,94988	0,4798	479,8	0,063	0,0578	57,8	0,100175845
Missil	4	2	7	2	2	40	200	10	12:00	23	23	1	11:59:40	29,10	2,06	2061,86	463	500	562	0,562	0,5484	548,4	0,520062142	0,484909158	0,471309158	471,3091584	0,4894	489,4	0,062	0,059	59	0,101660198
Missil	4	2	7	2	2	40	200	10	13:00	24	24	1	13:00:03	25,20	2,38	2380,95	461	502	550	0,55	0,5566	556,6	0,543248563	0,449742737	0,456342737	456,3427371	0,4968	496,8	0,048	0,0598	59,8	0,110877374
Missil	4	2	7	3	2	40	200	10	14:00	1	1	14:01:41	39,00	1,54	1538,46		453	520	0,52	0,5196	519,6	0,482083728	0,480,507572	0,480,5075723	480,5075723	0,4572	457,2	0,067	0,0624	62,4	0,083202589	
Missil	4	2	7	3	2	40	200	10	15:00	2	2	1	15:02:06	38,20	1,57	1570,68		445	505	0,505	0,499	499	0,484422834	0,463658466	0,457568466	457,568466	0,4406	440,6	0,06	0,0584	58,4	0,080736304
Missil	4	2	7	3	2	40	200	10	16:00	3	3	1	15:59:47	32,80	1,84	1840,49	433	465	518	0,518	0,5258	525,8	0,504011052	0,456980248	0,464780248	464,7802481	0,4674	467,4	0,053	0,0584	58,4	0,092089853
Missil	4	2	7	3	2	40	200	10	17:00	4	4	1	17:00:24	29,90	2,01	2006,69	436	468	525	0,525	0,5196	519,6	0,516077039	0,451914261	0,446514261	446,5142613	0,4684	468,4	0,057	0,0512	51,2	0,095024053
Missil	4	2	7	3	2	40	200	10	18:00	5	5	1	18:00:05	29,90	1,94	1941,75	443	478	537	0,537	0,5326	532,6	0,516565917	0,463425383	0,459025383	459,0253834	0,4712	471,2	0,059	0,0614	61,4	0,097564771
Missil	4	2	7	3	2	40	200	10	19:00	6	8	1	19:59:44	39,80	2,01	1875,00		455	515	0,515	0,5168	516,8	0,479019849	0,478971451	0,480,0771451	480,0771451	0,453	453	0,06	0,0638	63,8	0,081611304
Missil	4	2	7	3	2	40	200	10	20:00	7	8	1	20:59:44	39,80	1,51	1507,54		443	512	0,512	0,5114	511,4	0,479838656	0,475152644	0,474552644	474,5526438	0,4434	443,4	0,069	0,068	68	0,08106235
Missil	4	2	7	3	2	40	200	10	22:00	9	9	1	22:00:10	30,40	1,97	1937,68	424	458	503	0,503	0,5094	509,4	0,513680894	0,432310406	0,437810406	438,7104063	0,4588	458,8	0,045	0,0506	50,6	0,0923894
Missil	4	2	7	3	2	40	200	10	23:00	10	10	1	23:00:23	29,70	2,02	2020,20	430	466	527	0,527	0,532	532,3	0,517058087	0,459232123	0,459322123	459,3221233	0,4688	468,8	0,061	0,0642	64,2	0,097802281
Missil	4	2	7	3	2	40	200	10	00:00	11	11	1	00:00:29	29,80	2,05	2047,78	451	483	534	0,534	0,5346	534,6	0,519060362	0,457930938	0,458530938	458,530938	0,4814	481,4	0,051	0,0532	53,2	0,098763198
Missil	4	2	7	3	2	40	200	10	01:00	12	12	1	01:01:02	32,20	1,86	1863,90	406	450	554	0,554	0,5586	558,6	0,512995186	0,453835863	0,483,53863	483,538631	0,4505	450,5	0,054	0,0553	53,8	0,102846596
Missil	4	2	7	3	2	40	200	10	02:00	13	13	1	01:58:25	37,30	1,94	1941,75		482	535	0,535	0,5326	532,6	0,511362294	0,45879988	0,45879988	458,79988	0,4846	484,6	0,053	0,048	48,8	0,101562835
Mustang	5	2	7	1	2	40	200	10	14:00	1	1	14:00:12	44,50	1,35	1438,31	401	441	485	0,485	0,4926	492,6	0,46827906	0,457056545	0,449305945	449,3059453	0,4479	447,9	0,044	0,0504	50,4	0,074950983	
Mustang	5	2	7	1	2	40	200	10	15:00	2	2	1	14:59:55	32,60	2,31	2307,69	448	487	527	0,527	0,5412	541,2	0,537929882	0,447302755	0,447323654	447,323654	0,4488	448,8	0,04	0,0532	53,2	0,106138052
Mustang	5	2	7	1																												

Horse	No	Stable	Age	Day	Gender	QTgain	QTfeed	HRfeed	Time	timex	tidxcopy	No	EKGtime	HR	RR	RRms	QTpeak1	Qtpeak2	QT	Qts	AvgQT	AvgQTms	StandardhorseRR>0.8021	QCt	AvgQTc	AvgQTcms	AvgQtpeak	AvgQtpeakms	Tptend	Tptendavg	TpTendavg(ms)	Bazett
Mustang	5	2	7	2	2	40	200	10	05:00	16	16	1	0:01:55	30,50	1,90	1967,21	419	458	503	503	0,5138	513,8	0,513211092	0,432780208	0,443580208	443,5802079	0,464	464	0,045	0,0498	49,8	0,093034533
Mustang	5	2	7	2	2	40	200	10	06:00	17	17	1	0:05:47	31,40	1,90	1898,73	430	470	520	520	0,5228	522,8	0,508239521	0,445751779	0,457551779	457,5517787	0,47	470	0,05	0,0528	52,8	0,093001946
Mustang	5	2	7	2	2	40	200	10	07:00	18	18	1	0:07:01	39,60	1,52	1515,15	431	495	495	496	0,4916	491,6	0,48039142	0,45759988	0,45419988	454,19988	0,4316	431,6	0,064	0,06	60	0,078120368
Mustang	5	2	7	2	2	40	200	10	08:00	19	19	1	0:08:27	30,90	1,94	1941,75	409	451	495	495	0,4962	496,2	0,511362294	0,426629006	0,427829006	427,8290062	0,4508	450,8	0,044	0,0454	45,4	0,089264242
Mustang	5	2	7	2	2	40	200	10	09:00	20	20	1	0:08:59	28,70	2,09	2090,59	426	463	513	513	0,5102	510,2	0,522168423	0,433822877	0,4310228765	431,0228765	0,4616	461,6	0,05	0,0486	48,6	0,09523564
Mustang	5	2	7	2	2	40	200	10	10:00	21	21	1	1:00:15	34,30	1,75	1749,27	414	460	510	510	0,509	509	0,497388605	0,455602795	0,454602795	454,6027955	0,454	454	0,05	0,055	55	0,086910195
Mustang	5	2	7	2	2	40	200	10	11:00	22	22	1	1:10:04	29,70	2,02	2020,20	418	463	503	503	0,5026	502,6	0,517058087	0,428933213	0,428533213	428,5332133	0,4558	4558	0,04	0,0446	44,6	0,092224065
Mustang	5	2	7	2	2	40	200	10	12:00	23	23	1	1:15:19	30,20	1,99	1986,75	419	461	508	508	0,5056	505,6	0,514629831	0,436361469	0,4339614694	433,9614694	0,4584	458,4	0,047	0,0472	47,2	0,09200334
Mustang	5	2	7	2	2	40	200	10	13:00	24	24	1	1:30:25	29,70	2,02	2020,20	414	455	497	497	0,5022	502,2	0,517058087	0,422933213	0,428133213	428,1332133	0,4578	457,8	0,042	0,0444	44,4	0,092150667
Mustang	5	2	7	3	2	40	200	10	14:00	1	1	1:40:25	41,40	1,45	1449,28	403	441	488	488	0,4926	492,6	0,475608811	0,455382489	0,459982489	459,9982487	0,4398	439,8	0,047	0,0528	52,8	0,076558645	
Mustang	5	2	7	3	2	40	200	10	15:00	2	2	1	1:55:38	36,90	1,63	1626,02	379	426	477	477	0,4777	477,8	0,4884402	0,4315511	0,43233511	432,3351095	0,4244	424,4	0,051	0,0534	53,4	0,0785652
Mustang	5	2	7	3	2	40	200	10	16:00	3	1	1:55:38	32,00	1,88	1875,00	406	451	488	488	0,4852	485,2	0,506516142	0,42447488	0,42167488	421,67488	0,4492	449,2	0,037	0,036	36	0,085772053	
Mustang	5	2	7	3	2	40	200	10	17:00	4	4	1	1:27:28	36,30	1,65	1652,89	411	448	508	508	0,5008	500,8	0,49039142	0,46059988	0,45339988	453,39988	0,4466	446,6	0,06	0,0542	54,2	0,083121048
Mustang	5	2	7	3	2	40	200	10	18:00	5	5	1	1:57:59	33,10	1,81	1812,69	416	455	508	508	0,5058	505,8	0,501992628	0,448998672	0,446798672	446,7986715	0,455	455	0,053	0,0508	50,8	0,087915374
Mustang	5	2	7	3	2	40	200	10	19:00	6	1	1:58:59	35,00	1,68	1675,95	406	441	480	480	0,4884	488,4	0,492067398	0,430923902	0,433923902	433,9239023	0,441	441	0,039	0,0474	47,4	0,081627058	
Mustang	5	2	7	3	2	40	200	10	20:00	7	7	1	2:00:10	30,90	1,52	1515,15	401	440	483	483	0,4826	482,6	0,48039142	0,44559988	0,44519988	445,19988	0,4368	436,8	0,043	0,0458	45,8	0,076690174
Mustang	5	2	7	3	2	40	200	10	21:00	8	8	1	2:11:07	34,40	1,72	1742,14	383	426	473	473	0,4746	474,6	0,495563834	0,420427446	0,422027446	422,0274462	0,4272	427,2	0,047	0,0474	47,4	0,080452235
Mustang	5	2	7	3	2	40	200	10	22:00	9	9	1	2:22:03	41,60	1,44	1442,31	391	424	478	478	0,4777	477,8	0,475102958	0,445888342	0,445688342	445,6883415	0,429	429	0,054	0,0488	48,8	0,074079745
Mustang	5	2	7	3	2	40	200	10	23:00	10	10	1	2:23:06	33,30	1,80	1801,80	418	453	510	510	0,4996	499,6	0,501202231	0,451789069	0,441389069	441,3890692	0,455	455	0,057	0,0446	44,6	0,086576557
Mustang	5	2	7	3	2	40	200	10	00:00	11	11	1	0:02:29	37,70	1,59	1515,91	404	450	502	502	0,4994	499,4	0,486935187	0,450956113	0,456456113	456,4561134	0,4488	448,8	0,052	0,0506	50,6	0,081335073
Mustang	5	2	7	3	2	40	200	10	01:00	12	12	1	0:01:05	31,60	1,90	1898,73	416	453	503	503	0,5018	501,8	0,508239521	0,437751779	0,436551779	436,5517787	0,4574	457,4	0,05	0,0444	44,4	0,089266214
Mustang	5	2	7	3	2	40	200	10	02:00	13	13	1	0:02:47	32,80	1,83	1829,27	411	456	498	498	0,4922	492,2	0,503196298	0,437795002	0,431995002	431,995002	0,4606	460,6	0,042	0,0316	31,6	0,085941848
Mustang	5	2	7	3	2	40	200	10	03:00	14	14	1	0:03:26	37,90	1,58	1583,11	421	460	503	503	0,5011	511	0,485325457	0,460665843	0,468665843	468,6658431	0,4578	457,8	0,043	0,0532	53,2	0,083004435
Mustang	5	2	7	3	2	40	200	10	04:00	15	15	1	0:04:16	30,10	0,99	1993,36	421	475	507	507	0,5134	513,4	0,515109028	0,434882272	0,441282272	441,282272	0,4764	476,4	0,032	0,037	37	0,093577754
Mustang	5	2	7	3	2	40	200	10	05:00	16	16	1	0:05:02	31,60	1,90	1898,73	419	465	498	498	0,5018	501,8	0,508239521	0,437517779	0,436551779	436,5517787	0,4684	468,4	0,033	0,0334	33,4	0,089266214
Mustang	5	2	7	3	2	40	200	10	06:00	17	17	1	0:06:17	29,90	2,01	2006,69	426	468	520	520	0,515	515	0,516070709	0,446912681	0,441912681	441,912613	0,473	473	0,052	0,0446	44,6	0,094182808
Mustang	5	2	7	3	2	40	200	10	07:00	18	18	1	0:05:59	30,30	1,98	1980,20	419	466	495	495	0,5062	506,2	0,514153796	0,423837504	0,435037504	435,0375038	0,4669	466,9	0,029	0,0372	37,2	0,091960395
Mustang	5	2	7	3	2	40	200	10	08:00	19	19	1	0:08:04	31,40	1,94	1431,98	378	413	466	466	0,4746	474,6	0,474333234	0,434733234	0,442380666	442,380666	0,4272	427,2	0,053	0,0512	51,2	0,073319707
Mustang	5	2	7	3	2	40	200	10	09:00	20	20	1	0:09:20	32,80	1,73	1452,72	394	433	485	485	0,4858	485,8	0,475863575	0,452927725	0,452927725	452,927725	0,4294	429,4	0,052	0,0564	56,4	0,075593157
Mustang	5	2	7	3	2	40	200	10	10:00	21	21	1	1:00:10	33,30	1,79	1791,04	406	446	500	500	0,5058	505,8	0,500421271	0,442570029	0,448370029	448,3700293	0,4478	447,8	0,054	0,058	58	0,087388933
Mustang	5	2	8	1	2	40	200	10	11:00	22	22	1	1:00:48	28,70	2,09	2090,59	405	445	517	517	0,512	512	0,522168423	0,437822877	0,432822877	432,8228765	0,4438	443,8	0,067	0,0658	65,8	0,083179656
Lotus	6	2	8	1	2	40	200	10	12:00	23	23	1	1:12:05	27,30	2,21	2197,80	403	446	505	505	0,5056	506	0,529951866	0,41803944	0,41903944	419,0394404	0,4452	445,2	0,059	0,0608	60,8	0,096843214
Lotus	6	2	8	1	2	40	200	10	13:00	24	24	1	1:13:02	24,60	2,24	2283,81	409	451	517	517	0,5168	516,8	0,532928733	0,427062567	0,426865266	426,865266	0,454	454	0,066	0,0628	62,8	0,099882629
Lotus	6	2	8	2	2</td																											

Horse	No	Stable	Age	Day	Gender	QTgain	QTfeed	HRfeed	Time	timex	tidscopy	No	EKtime	HR	RR	RRms	QTpeak1	Qtpeak2	QT	Qts	AvgQT	AvgQTms	StandardhorseRR>0.8021	QC	AvgTc	AvgQTcms	AvgQtpeak	AvgQtpeakms	Tptend	Tptendavg	TpTendavg(ms)	Bazett
Lotus	6	2	8	3	2	40	200	10	14:00	1	1	14:02:34	36,00	1,67	1666,67		436	498	0,4994	499,4	0,49139142	0,44959988	0,44959988	435,6	0,062	0,0638	63,8	0,08323333				
Lotus	6	2	8	3	2	40	200	10	15:00	2	2	14:57:28	37,30	1,61	1608,58		424	490	0,49	4912	0,487174262	0,445817038	0,447017038	422,4	0,066	0,0688	68,8	0,080427384				
Lotus	6	2	8	3	2	40	200	10	16:00	3	3	14:00:13	28,80	2,08	2083,33	401	440	495	0,4992	499,2	0,52164142	0,41634988	0,404254988	420,54988	0,055	0,0588	58,8	0,093020428				
Lotus	6	2	8	3	2	40	200	10	17:00	4	4	14:57:45	29,50	2,03	2033,90	396	435	495	0,495	4936	0,518025437	0,419938863	0,418538863	418,5388631	0,436	0,06	0,0576	57,6	0,090879126			
Lotus	6	2	8	3	2	40	200	10	18:00	5	5	14:58:07	28,70	2,09	2090,59	414	455	513	0,513	5146	514,6	0,522168423	0,433822877	0,434522877	435,4228765	0,4556	0,058	0,059	59	0,096056959		
Lotus	6	2	8	3	2	40	200	10	19:00	6	1	14:00:09	27,30	2,20	2197,80	408	450	510	0,51	5088	508,8	0,52995186	0,42303944	0,42183944	421,8394404	0,4484	0,064	0,0604	60,4	0,097379105		
Lotus	6	2	8	3	2	40	200	10	20:00	7	7	14:02:09	35,30	1,70	1699,72		431	500	0,5	4954	495,4	0,493790853	0,449200447	0,446460047	444,6004466	0,4296	0,069	0,0658	65,8	0,083381298		
Lotus	6	2	8	3	2	40	200	10	21:00	8	8	14:05:38	36,10	1,66	1662,05		419	485	0,485	4874	487,4	0,49105624	0,43693506	0,43933506	439,3350601	0,4206	0,066	0,0668	66,8	0,081120744		
Lotus	6	2	8	3	2	40	200	10	22:00	9	9	14:15:43	33,80	1,78	1775,15		431	498	0,498	503	503	0,49926716	0,44172414	0,44672414	446,7241404	0,4342	0,067	0,0688	68,8	0,08651863		
Lotus	6	2	8	3	2	40	200	10	23:00	10	10	14:23:02	29,80	2,01	2013,42	401	441	492	0,492	4978	497,8	0,516565917	0,418425383	0,420425384	420,4253834	0,441	0,051	0,0568	56,8	0,091189904		
Lotus	6	2	8	3	2	40	200	10	00:00	11	11	14:03:23	30,10	1,99	1993,36	389	428	485	0,485	4928	492,8	0,515010928	0,412882277	0,420682272	420,682272	0,4308	0,057	0,062	62	0,089822978		
Lotus	6	2	8	3	2	40	200	10	02:00	12	13	14:02:04	29,40	2,04	2040,82	414	458	510	0,51	5086	508,6	0,518554685	0,434436615	0,43036615	433,0366147	0,4544	0,052	0,0542	54,2	0,093799968		
Lotus	6	2	8	3	2	40	200	10	05:00	16	16	14:02:13	27,20	2,21	2205,88	416	461	525	0,525	5188	518,8	0,530538479	0,437452821	0,431258221	431,2582212	0,4596	0,064	0,0592	59,2	0,099475359		
Lotus	6	2	8	3	2	40	200	10	06:00	17	17	14:02:28	29,00	2,07	2068,97	423	463	510	0,51	5184	518,4	0,520598317	0,432392983	0,440792983	440,7929834	0,461	0,047	0,0574	57,4	0,096264463		
Lotus	6	2	8	3	2	40	200	10	08:00	19	19	14:08:15	35,30	1,70	1699,72		433	497	0,497	505	500	0,493790853	0,446200447	0,449200447	449,2004466	0,4324	0,064	0,0676	67,6	0,084155228		
Lotus	6	2	8	3	2	40	200	10	09:00	20	20	14:09:20	28,70	2,09	2090,59	393	430	495	0,495	4904	490,4	0,522168423	0,415822877	0,411222877	411,2228765	0,4312	0,065	0,0592	59,2	0,091539706		
Lotus	6	2	8	3	2	40	200	10	11:00	22	22	14:11:00	27,40	2,22	2222,22	413	456	512	0,512	5042	504,2	0,531724753	0,422366547	0,415465647	415,4656457	0,4538	0,056	0,0504	50,4	0,097033335		
Lotus	6	2	8	3	2	40	200	10	12:00	23	23	14:12:01	32,30	1,86	1857,59		436	492	0,492	495	495	0,505252101	0,429739199	0,432739199	432,7391989	0,4346	0,056	0,0604	60,4	0,087097149		
Lotus	6	2	8	3	2	40	200	10	13:00	24	24	14:13:05	25,90	2,32	2316,80	406	441	502	0,502	5004	500,4	0,538576748	0,406144552	0,404814552	404,8154518	0,4454	0,061	0,055	55	0,098325784		
Napoleon	7	1	6	1	2	40	200	10	13:00	0	0	14:13:05	25,80	1,68	1675,98		446	492	547	0,547	5514	551,4	0,492067398	0,497923902	0,52323902	523,23902	0,4908	0,055	0,0606	60,6	0,092156346	
Napoleon	7	1	6	1	2	40	200	10	14:00	1	1	14:13:58	35,80	1,68	1675,98		505	574	0,574	5616	561,6	0,492067398	0,524293902	0,525293902	512,5293902	0,5028	0,069	0,0588	58,8	0,093861088		
Napoleon	7	1	6	1	2	40	200	10	15:00	2	2	14:15:09	37,40	1,60	1604,28		448	497	555	0,555	549	549	0,486862008	0,5111129292	0,5051129292	505,1129292	0,4916	0,058	0,0574	57,4	0,089771099	
Napoleon	7	1	6	1	2	40	200	10	16:00	3	3	14:16:00	39,60	1,52	1515,15	423	465	520	0,52	5276	527,6	0,48039142	0,48259988	0,49019988	490,19988	0,461	0,055	0,0666	66,6	0,083841144		
Napoleon	7	1	6	1	2	40	200	10	17:00	4	4	14:16:59	37,50	1,60	1600,00	416	463	539	0,539	530	530	0,48655142	0,48655142	0,48643938	486,43938	0,4652	0,076	0,0648	64,8	0,086548638		
Napoleon	7	1	6	1	2	40	200	10	18:00	5	5	14:18:01	32,70	1,83	1834,86		433	477	529	0,529	5352	535,2	0,486888771	0,459988878	0,459988878	459,9888708	0,4982	0,048	0,0384	38,4	0,091039589	
Napoleon	7	1	6	1	2	40	200	10	19:00	6	6	14:19:01	31,90	1,74	1986,75		480	529	0,529	5352	535,2	0,514629831	0,457361469	0,463561469	463,5614694	0,4794	0,052	0,0558	55,8	0,097389611		
Napoleon	7	1	6	1	2	40	200	10	20:00	16	16	14:05:26	30,70	1,95	1954,40		436	485	539	0,539	5418	541,8	0,512208671	0,487574114	0,485457414	485,457412	0,4666	0,066	0,0656	65,6	0,088090371	
Napoleon	7	1	6	1	2	40	200	10	20:00	17	17	14:05:59	29,30	2,05	2047,74		465	527	0,527	525	525	0,494141414	0,47584988	0,47384988	473,84988	0,4664	0,062	0,0586	58,6	0,088488732		
Napoleon	7	1	6	1	2	40	200	10	21:00	8	8	14:21:03	35,70	1,64	1704,50		445	487	539	0,539	539	539	0,49006175	0,50192955	0,49192955	491,9295503	0,4728	0,076	0,0662	66,4	0,086502934	
Napoleon	7	1	6	1	2	40	200	10	22:00	9	9	14:20:08	31,70	1,98	1759,53		473	545	0,545	538	538	0,498133355	0,489857945	0,482857945	482,857945	0,468	0,072	0,07	70	0,092130852		
Napoleon	7	1	6	1	2	40	200	10	09:00	20	20	14:09:22	33,80	1,70	2033,90		490	550	0,55	5466	546,6	0,518052437	0,474436615	0,474436615	474,4366147	0,493	0,053	0,057	57	0,101435278		
Napoleon	7	1	6	1	2	40	200	10	11:00	22	22	14:11:00	32,30	2,08	2040,82		450	497	550	0,55	550	550	0,485546855	0,474457448	0,474457448	474,4574462	0,4876	0,053	0,057	57	0,106372172	
Napoleon	7	1	6	1	2	40	200	10	12:00	23	23	14:12:00	32,30	2,08	2187,90		433	477	542	0,542	5442	542,2	0,485474488	0,506516142	0,506516142	506,516142	0,4844	0,054	0,0574	57,4	0,097784454	
Napoleon	7	1	6	2	2	40	200	10	13:00	0	0	14:13:06	30,80	1,98	1980,20		450	494	554	0,554	552	552	0,498866955	0,489104305	0,471504035	471,5043048	0,4612	0,08	0,0662	66,2	0,09058166	
Napoleon	7	1	6	2	2	40	200	10	14:00	1	1	14:14:01	35,15	1,71	1769,40		465	545	0,545	5274	527,4	0,498866955	0,489104305	0,471504035	471,5043048	0,4644	0,054	0,0574	57,4	0,09771523		
Napoleon	7	1	6	2	2	40																										

Horse	No	Stable	Age	Day	Gender	QTgain	QTfeed	HRfeed	Time	timex	tidxcopy	No	EKGtime	HR	RR	RRrms	QTpeak1	Qtpeak2	QT	Qts	AvgQT	AvgQTms	StandardhorseRR>0.8021	QTc	AvgQTc	AvgQTcms	AvgQTpeak	AvgQtpeakms	Tptend	Tptendavg	TpTendavg(ms)	Bazett
Napoleon	7	1	6	3	2	40	200	10	03:00:05	31,50,190,76	441	490	542	542	5,05398	539,8	0,508677134	0,476314166	0,476314166	0,4878	487,8	0,052	0,052	52	0,09617841							
Napoleon	7	1	6	3	2	40	200	10	04:00:05	15,15,1	404	505	560	566	0,50616	561,6	0,5108052437	0,4865938863	0,4865938863	0,50002	500,2	0,055	0,0614	61,4	0,103398941							
Napoleon	7	1	6	3	2	40	200	10	05:00:06	16,16,1	405	518	579	579	0,508	580	0,506092355	0,515898945	0,516898945	0,51666	516,6	0,061	0,0634	63,4	0,102370654							
Napoleon	7	1	6	3	2	40	200	10	06:00:07	17,17,1	405	477	540	544	0,50422	542,2	0,49926716	0,48372414	0,489592414	0,481	481	0,063	0,0612	61,2	0,093261235							
Napoleon	7	1	6	3	2	40	200	10	07:00:08	18,18,1	406	456	520	520	0,5226	522,6	0,493095645	0,469895655	0,472495654	0,4542	454,2	0,064	0,0684	68,4	0,087711236							
Napoleon	7	1	6	3	2	40	200	10	08:00:09	19,19,1	408	471	534	534	0,50302	530,2	0,504835864	0,472155436	0,468355436	0,4692	469,2	0,063	0,061	61	0,093146645							
Napoleon	7	1	6	3	2	40	200	10	09:00:10	20,20,1	409	482	539	539	0,50402	540,2	0,524859505	0,457131795	0,458331795	0,4806	480,6	0,057	0,0596	59,6	0,101725545							
Napoleon	7	1	6	3	2	40	200	10	10:00:11	21,21,1	410	495	544	544	0,50464	546,4	0,523233525	0,463757775	0,466157774	0,494	494	0,049	0,0524	52,4	0,102350097							
Napoleon	7	1	6	3	2	40	200	10	11:00:12	22,22,1	411	488	552	552	0,5049	549,6	0,528217507	0,466773793	0,464373793	0,487	487	0,064	0,0626	62,6	0,104614572							
Napoleon	7	1	6	3	2	40	200	10	12:00:13	23,23,1	412	482	540	540	0,50356	535,6	0,523771702	0,459219598	0,454819598	0,4804	480,4	0,058	0,0552	55,2	0,100503549							
Gendarm	8	1	12	1	2	40	200	10	13:00:00	0,0	413	482	542	542	0,50426	542,6	0,492067398	0,492923902	0,493523902	0,482	482,2	0,06	0,0604	60,4	0,090685589							
Gendarm	8	1	12	1	2	40	200	10	14:00:01	1,1,1	413	488	544	544	0,50456	545,6	0,492067398	0,494923902	0,496523902	0,486	486	0,056	0,0596	59,6	0,091186983							
Gendarm	8	1	12	1	2	40	200	10	15:00:02	2,2,1	414	475	529	529	0,536	536	0,471693746	0,500297554	0,507297554	0,4752	475,2	0,054	0,0608	60,8	0,081793234							
Gendarm	8	1	12	1	2	40	200	10	16:00:03	3,3,1	415	440	498	498	0,5066	506,6	0,46550059	0,47549071	0,48409071	0,440	440	0,058	0,0662	66,2	0,074857005							
Gendarm	8	1	12	1	2	40	200	10	17:00:04	4,4,1	416	456	530	530	0,5216	521,6	0,472644941	0,5003346359	0,491946359	0,4528	452,8	0,074	0,0688	68,8	0,079915824							
Gendarm	8	1	12	1	2	40	200	10	18:00:05	5,5,1	417	468	517	517	0,5266	526,6	0,487817038	0,482417038	0,482,17038	0,468	468	0,049	0,0586	58,6	0,086223657							
Gendarm	8	1	12	1	2	40	200	10	19:00:06	6,6,1	418	465	527	527	0,5236	532,6	0,488760985	0,481,230135	0,486,330138	0,4642	464,2	0,062	0,0684	68,4	0,087799651							
Gendarm	8	1	12	1	2	40	200	10	20:00:07	7,7,1	419	438	525	525	0,5108	510,8	0,467623563	0,500367737	0,481667737	0,46386	436,8	0,087	0,074	74	0,076315347							
Gendarm	8	1	12	1	2	40	200	10	21:00:08	8,8,1	420	488	544	544	0,50456	545,6	0,492067398	0,494923902	0,496523902	0,486	486	0,056	0,0596	59,6	0,091186983							
Gendarm	8	1	12	1	2	40	200	10	22:00:09	9,9,1	421	443	507	507	0,507	507	0,485022999	0,464,968301	0,464,968301	0,4394	439,4	0,064	0,0676	67,6	0,082246261							
Gendarm	8	1	12	1	2	40	200	10	23:00:10	10,10,1	422	441	510	510	0,512	512	0,48039142	0,47259988	0,47459988	0,4464	446,4	0,069	0,0655	65,6	0,081362141							
Gendarm	8	1	12	1	2	40	200	10	00:00:11	11,11,1	423	436	510	510	0,5184	518,4	0,479564352	0,473,246948	0,481,286948	0,435	435	0,074	0,0834	83,4	0,082068887							
Gendarm	8	1	12	1	2	40	200	10	01:00:12	12,12,1	424	440	525	525	0,525	525	0,487174262	0,480,817038	0,478,717038	0,445	445	0,085	0,073	73	0,084815523							
Gendarm	8	1	12	1	2	40	200	10	02:00:13	13,13,1	425	436	502	502	0,5066	506,6	0,475355275	0,469636025	0,472,4362046	0,4378	437,8	0,066	0,0688	68,8	0,078639571							
Gendarm	8	1	12	1	2	40	200	10	03:00:14	14,14,1	426	465	525	525	0,5254	525,4	0,4884402	0,4795511	0,479,51095	0,4602	460,2	0,06	0,0652	65,2	0,086492188							
Gendarm	8	1	12	1	2	40	200	10	04:00:15	15,15,1	427	466	540	540	0,537	537	0,494493984	0,488497316	0,485,4973159	0,4676	467,6	0,074	0,0694	69,4	0,090640173							
Gendarm	8	1	12	1	2	40	200	10	05:00:16	16,16,1	428	458	518	518	0,5254	525,4	0,489733886	0,471,2574174	0,478,674948	0,4574	457,4	0,06	0,068	68	0,086964827							
Gendarm	8	1	12	1	2	40	200	10	06:00:17	17,17,1	429	460	537	537	0,533	533	0,489407813	0,490,583487	0,486,583486	0,4566	456,6	0,077	0,0764	76,4	0,088102182							
Gendarm	8	1	12	1	2	40	200	10	07:00:18	18,18,1	430	443	522	522	0,522	522	0,477946976	0,487,044324	0,487,044324	0,445	445	0,079	0,077	77	0,082024387							
Gendarm	8	1	12	1	2	40	200	10	08:00:19	19,19,1	431	436	507	507	0,5138	513,8	0,475608811	0,474,382489	0,481,182487	0,4376	437,6	0,071	0,0762	76,2	0,079853495							
Gendarm	8	1	12	1	2	40	200	10	09:00:20	20,20,1	432	440	507	507	0,5064	506,4	0,479564352	0,473,2626498	0,469,8269477	0,4394	439,4	0,067	0,067	67	0,080169144							
Gendarm	8	1	12	1	2	40	200	10	10:00:21	21,21,1	433	460	523	523	0,5216	521,6	0,49039142	0,475,59988	0,474,19988	0,4656	465,4	0,063	0,0652	56,2	0,086573359							
Gendarm	8	1	12	1	2	40	200	10	11:00:22	22,22,1	434	461	529	529	0,5268	526,8	0,492067398	0,477,23902	0,477,23902	0,462	462	0,068	0,0648	64,8	0,088044941							
Gendarm	8	1	12	1	2	40	200	10	12:00:23	23,23,1	435	441	510	510	0,512	512	0,476,635322	0,495,355978	0,493,3559776	0,4582	458,2	0,074	0,0698	66,4	0,088334807							
Gendarm	8	1	12	1	2	40	200	10	13:00:24	24,24,1	436	441	508	508	0,508	512,6	0,474,353234	0,476,630606	0,481,28066	0,4486	448,6	0,057	0,066	64,4	0,079190227							
Gendarm	8	1	12	1	2	40	200	10	14:00:25	25,25,1	437	446	527	527	0,5274	527,4	0,476,714169	0,484,371131	0,481,577131	0,4424	442,4	0,074	0,0698	69,8	0,078846669							
Gendarm	8	1	12	1	2	40	200	10	15:00:26	26,26,1	438	447	535	535	0,5205	520,5	0,490,593067	0,476,350501	0,481,595067	0,472,2	472,2	0,064	0,068	68	0,093753079							
Gendarm	8	1	12	1	2	40	200	10	16:00:27	27,27,1	439	453	537	537	0,5274	527,4	0,493709853	0,471,507029	0,477,270029	0,4652	465,2	0,064	0,0655	65,6	0,093444886							
Gendarm	8	1	12	1	2	40	200	10	17:00:28	28,28,1	440	471	546	546	0,5202	520,2	0,490542171	0,486,570029	0,483,1700293	0,4778	477,8	0,066	0,0628	62,8	0,093401454							
Gendarm	8	1	12	1	2	40	200	10	18:00:29	29,29,1	441	478	544	544	0,50406	504,6	0,504021271	0,486,778126	0,477,356216	0,4542	454,2	0,072	0,0652	57,2	0,085378423							
Gendarm	8	1	12	1	2	40	200	10	19:00:30	30,30,1	442	475	520	520	0,527	527	0,484722129	0,478,69171	0,478,269173	0,4668	469,8	0,045	0,0572	57,2	0,08098425							

Horse	No	Stable	Age	Day	Gender	QTgain	QTfeed	HRfeed	Time	timex	tidscopy	No	EKGtime	HR	RR	RRms	QTpeak1	Qtpeak2	QT	Qts	AvgQT	AvgQTms	StandardhorseRR>0.8021	QTC	AvgQTc	AvgQTcms	AvgQtpeak	AvgQtpeakms	Tptend	Tptendavg	TpTendavg(ms)	Bazett
Gendarm	8	1	12	3	2	40	200	10	11:00	22	22	1	11:01:28	33,90	1,75	1769,91	419	461	537	5,37	0,5278	527,8	0,49886995	0,481104305	0,4790194038	4636	463,6	0,076	0,0642	64,2	0,090650361	
Gendarm	8	1	12	3	2	40	200	10	12:00	23	23	1	12:01:32	30,90	1,82	1823,71	416	468	527	5,27	0,5308	530,8	0,502792636	0,467198664	0,47098664	4694	469,4	0,059	0,0614	61,4	0,092540739	
Remus	9	1	22	1	2	40	200	10	13:00	0	1	1	13:00:29	34,20	1,75	1754,39	384	435	505	5,05	0,4968	496,8	0,497759841	0,450231459	0,442031459	4316	431,6	0,07	0,0652	65,2	0,084951008	
Remus	9	1	22	1	2	40	200	10	14:00	1	1	1	14:02:26	42,90	1,40	1398,60	372	428	493	4,93	0,5026	502,6	0,471992982	0,464061418	0,473661418	4306	430,6	0,065	0,072	72	0,07673506	
Remus	9	1	22	1	2	40	200	10	15:00	2	1	1	15:02:26	39,60	1,52	1515,15	379	428	492	4,92	0,493	493	0,48039142	0,45459988	0,45559988	428	428	0,064	0,065	65	0,078342843	
Remus	9	1	22	1	2	40	200	10	16:00	3	3	1	16:00:00	42,80	1,40	1401,87	357	421	490	4,49	0,4958	495,8	0,472167121	0,460824179	0,466624179	4234	423,4	0,069	0,0724	72,4	0,075785241	
Remus	9	1	22	1	2	40	200	10	17:00	4	4	1	17:01:27	38,50	1,56	1558,44	374	424	487	4,87	0,4888	488,8	0,483534277	0,446457023	0,448257023	4247	427	0,063	0,0618	61,8	0,078772753	
Remus	9	1	22	1	2	40	200	10	18:00	5	5	1	18:00:10	39,90	1,50	1503,76	372	421	492	4,92	0,493	493	0,479564352	0,455426948	0,456426948	4234	423,4	0,071	0,0696	69,6	0,078047765	
Remus	9	1	22	1	2	40	200	10	19:00	6	6	1	19:01:32	35,70	1,68	1680,67	367	426	485	4,85	0,4924	492,4	0,492408227	0,435580373	0,442983073	4258	425,8	0,059	0,0666	66,6	0,082410763	
Remus	9	1	22	1	2	40	200	10	20:00	7	7	1	19:58:54	39,50	1,52	1518,99	366	418	485	4,85	0,4838	483,8	0,480669901	0,447321399	0,446121399	421	421	0,067	0,0628	62,8	0,076978123	
Remus	9	1	22	1	2	40	200	10	21:00	8	8	1	20:58:34	37,80	1,55	1550,39	372	419	485	4,85	0,4796	479,6	0,48294956	0,44504174	0,43964174	424	420	0,066	0,0596	59,6	0,077094553	
Remus	9	1	22	1	2	40	200	10	22:00	9	9	1	22:00:53	34,20	1,75	1754,39	374	418	482	4,82	0,485	485	0,497759841	0,427231459	0,430231459	4232	423,2	0,064	0,0618	61,8	0,08293325	
Remus	9	1	22	1	2	40	200	10	23:00	10	10	1	23:01:16	38,60	1,55	1554,40	378	428	500	5,0	0,4966	496,6	0,483241611	0,459750139	0,465301391	4294	429,4	0,072	0,0672	67,2	0,079930598	
Remus	9	1	22	1	2	40	200	10	00:00	11	11	1	00:03:05	35,10	1,71	1709,40	374	421	500	5,0	0,4898	489,8	0,494493984	0,448497316	0,438297316	4228	422,8	0,079	0,067	67	0,08267329	
Remus	9	1	22	1	2	40	200	10	01:00	12	12	1	01:01:43	38,08	1,52	1578,95	367	414	478	0,48	0,4776	477,6	0,485022999	0,435968301	0,445568301	4148	414,8	0,064	0,0628	62,8	0,077476951	
Remus	9	1	22	1	2	40	200	10	02:00	13	13	1	02:00:31	38,80	1,57	1570,68	369	419	478	0,48	0,4782	478,2	0,484422834	0,436568466	0,437684646	4198	419,8	0,059	0,0584	58,4	0,077370943	
Remus	9	1	22	1	2	40	200	10	03:00	14	14	1	02:59:58	34,70	1,29	1721,11	371	423	485	0,485	0,481	481	0,49524561	0,423066739	0,428066739	4149	419	0,062	0,062	62	0,08165454	
Remus	9	1	22	1	2	40	200	10	04:00	15	15	1	04:00:51	34,20	1,75	1754,39	376	426	502	5,02	0,4942	494,2	0,497759841	0,447231459	0,439431459	4244	424,4	0,076	0,0698	69,8	0,084506417	
Remus	9	1	22	1	2	40	200	10	05:00	16	16	1	05:00:07	35,70	1,68	1680,67	371	421	485	0,485	0,488	488	0,492408227	0,435580373	0,438583073	4258	425,8	0,064	0,0622	62,2	0,081674355	
Remus	9	1	22	1	2	40	200	10	06:00	17	17	1	06:04:28	37,10	1,62	1617,25	369	421	493	0,493	0,4892	489,2	0,487803819	0,448187481	0,443848816	4216	421,6	0,072	0,0676	67,6	0,080315523	
Remus	9	1	22	1	2	40	200	10	07:00	18	18	1	07:00:42	36,90	1,63	1626,02	376	424	488	0,488	0,4954	495,4	0,4884402	0,4255111	0,4499511	4194	419,4	0,059	0,0596	59,6	0,08015354	
Remus	9	1	22	1	2	40	200	10	08:00	19	19	1	08:01:47	33,40	1,78	1796,41	384	430	498	0,498	0,4952	495,2	0,500810582	0,440108718	0,437380718	4292	429,2	0,068	0,066	66	0,085685513	
Remus	9	1	22	1	2	40	200	10	09:00	20	20	1	09:00:23	35,60	1,69	1835,89	378	426	502	5,02	0,4924	492,4	0,492750971	0,452240329	0,446240329	4145	425	0,076	0,0674	67,4	0,082562428	
Remus	9	1	22	1	2	40	200	10	10:00	21	21	1	10:00:39	32,70	1,83	1834,86	383	433	500	5,0	0,5034	503,4	0,503602429	0,43938871	0,42788871	434	434	0,067	0,0694	69,4	0,08803175	
Remus	9	1	22	1	2	40	200	10	11:00	22	22	1	11:00:51	36,60	1,67	1666,67	379	426	493	0,493	0,492	492	0,49139142	0,44459988	0,44359988	4258	425,8	0,067	0,0662	66,2	0,081586465	
Remus	9	1	22	1	2	40	200	10	12:00	23	23	1	12:00:59	36,90	1,63	1626,02	378	428	493	0,493	0,4956	495,6	0,4884402	0,4475511	0,4501511	4218	428	0,065	0,0676	67,6	0,081586465	
Remus	9	1	22	2	2	40	200	10	13:00	0	1	1	12:09:09	37,60	1,60	1595,74	369	421	473	0,473	0,4776	477,6	0,486242484	0,429748816	0,434,38816	4218	421,8	0,052	0,0558	55,8	0,077887972	
Remus	9	1	22	2	2	40	200	10	14:00	1	1	1	14:00:19	35,30	1,70	1699,72	374	419	478	0,478	0,479	479	0,4937390853	0,427200447	0,428200447	4194	419,4	0,059	0,0596	59,6	0,080620996	
Remus	9	1	22	2	2	40	200	10	15:00	2	2	1	15:01:39	43,60	1,78	1736,17	367	416	480	0,48	0,4762	476,2	0,470299677	0,452691623	0,448896123	4128	412,8	0,064	0,0634	63,4	0,072118411	
Remus	9	1	22	2	2	40	200	10	16:00	3	3	1	16:01:09	35,30	1,70	1739,13	372	414	475	0,475	0,477	477	0,49665229	0,413750174	0,421,736126	4138	413,8	0,057	0,0612	61,2	0,080752423	
Remus	9	1	22	2	2	40	200	10	17:00	4	4	1	17:00:27	35,50	1,69	1690,14	378	426	493	0,493	0,4916	491,6	0,502792636	0,427786126	0,437186126	4148	418	0,066	0,0656	65,6	0,077463772	
Remus	9	1	22	2	2	40	200	10	18:00	5	5	1	17:59:48	39,50	1,52	1518,99	364	413	475	0,475	0,4784	478,4	0,498159355	0,419857945	0,43257945	4142	414,2	0,062	0,0642	64,2	0,081924534	
Remus	9	1	22	2	2	40	200	10	19:00	6	6	1	19:00:14	35,50	1,64	1639,34	378	423	500	5,0	0,487	487	0,489407813	0,453583487	0,440538487	4145	415	0,067	0,0648	64,8	0,079855833	
Remus	9	1	22	2	2	40	200	10	20:00	7	7	1	20:01:20	38,90	1,54	1542,42	369	421	488	0,488	0,4836	483,6	0,4884402	0,440573196	0,450497316	41406	440,6	0,059	0,0614	61,4	0,079611005	
Remus	9	1	22	2	2	40	200	10	21:00	8	8	1	21:00:52	34,50	1,70	1780,42	388	435	500	5,0	0,4976	497,6	0,49965229	0,443447174	0,							

Horse	No	Stable	Age	Day	Gender	QTgain	QTfeed	HRfeed	Time	timex	No	EKGtime	HR	RR	RRms	QTpeak1	Qtpeak2	QT	Qts	AvgQT	AvgQTms	StandardhorseRR>0.8021	QTC	AvgQTC	AvgQTcms	AvgQtpeak	AvgQtpeakms	Tptend	Tptdavg	TpTendavg(ms)	Bazett
Kemal	10	1	9	1	2	40	200	10	20:00	7	1	20:02:06	41,20	1,46	1456,31		441	527	527	0,5256	525,6	0,476119575	0,493871725	0,49271725	0,4426	442,6	0,086	0,083	83	0,081885452	
Kemal	10	1	9	1	2	40	200	10	21:00	8	1	21:02:31	37,70	1,59	1591,51		461	542	542	0,5402	540,2	0,485935187	0,490956113	0,497256113	0,4552	455,2	0,081	0,085	85	0,087979989	
Kemal	10	1	9	1	2	40	200	10	22:00	9	1	22:03:31	39,40	1,52	1522,84		441	523	523	0,5212	521,2	0,480949796	0,485041504	0,483241504	0,4418	441,8	0,082	0,0794	79,4	0,083034064	
Kemal	10	1	9	1	2	40	200	10	23:00	10	1	23:01:33	37,20	1,61	1612,90		446	527	527	0,5292	529,2	0,487488194	0,482503106	0,484703106	0,446	446	0,081	0,0832	83,2	0,086757558	
Kemal	10	1	9	1	2	40	200	10	00:00	11	1	00:01:37	38,10	1,57	1574,80		453	544	544	0,5326	532,6	0,484722129	0,502269171	0,490869171	0,4508	450,8	0,091	0,0818	81,8	0,08628567	
Kemal	10	1	9	1	2	40	200	10	01:00	12	1	01:00:19	37,40	1,60	1604,28		450	534	534	0,5306	530,6	0,486862008	0,490129292	0,486729292	0,4504	450,4	0,084	0,0802	80,2	0,086762378	
Kemal	10	1	9	1	2	40	200	10	02:00	13	1	02:00:17	34,60	1,73	1734,10		458	540	54	0,5348	534,8	0,496287374	0,486703926	0,481503926	0,4568	456,8	0,082	0,078	78	0,090918728	
Kemal	10	1	9	1	2	40	200	10	03:00	14	1	03:03:13	41,70	1,44	1438,85		431	523	523	0,5194	519,4	0,474851852	0,491139448	0,487539448	0,4328	432,8	0,092	0,0866	86,6	0,080432935	
Kemal	10	1	9	1	2	40	200	10	04:00	15	15	1	03:59:28	34,40	1,74	1744,19		468	552	552	0,5552	555,2	0,497019327	0,497971973	0,501171973	0,4708	470,8	0,084	0,0844	84,4	0,094660814
Kemal	10	1	9	1	2	40	200	10	05:00	16	1	05:00:02	34,50	1,74	1739,13		471	545	545	0,5474	547,4	0,49665229	0,49133901	0,49373901	0,4744	474,4	0,074	0,073	73	0,093195565	
Kemal	10	1	9	1	2	40	200	10	06:00	17	17	1	06:00:03	37,00	1,62	1621,62		471	552	552	0,5524	552,4	0,48812151	0,50687015	0,50727015	0,4722	472,2	0,081	0,0802	80,2	0,090814001
Kemal	10	1	9	1	2	40	200	10	07:00	18	18	1	06:59:29	38,80	1,55	1546,39		455	554	554	0,5474	547,4	0,482659461	0,514331839	0,507731839	0,4546	454,6	0,099	0,0928	92,8	0,087879774
Kemal	10	1	9	1	2	40	200	10	08:00	19	19	1	08:00:39	33,60	1,79	1785,71		473	559	559	0,5542	554,2	0,500034277	0,501957023	0,497157023	0,473	473	0,086	0,0812	81,2	0,095608583
Kemal	10	1	9	1	2	40	200	10	09:00	20	20	1	08:59:51	37,20	1,61	1612,90		456	557	557	0,5434	543,4	0,487488194	0,512503106	0,498903106	0,456	456	0,101	0,0874	87,4	0,080930934
Kemal	10	1	9	1	2	40	200	10	10:00	21	1	10:00:16	40,50	1,48	1481,48		448	534	534	0,535	535	0,477946976	0,499044324	0,500044324	0,4484	448,4	0,086	0,0866	86,6	0,08406714	
Kemal	10	1	9	1	2	40	200	10	11:00	22	22	1	11:00:24	30,80	1,95	1948,05	421	478	545	545	0,5512	551,2	0,511819991	0,476171309	0,482371309	0,448	480	0,067	0,0712	71,2	0,099319346
Kemal	10	1	9	1	2	40	200	10	12:00	23	1	12:00:54	33,10	1,82	1818,18		473	554	554	0,5562	556,2	0,50239142	0,49459988	0,49679988	0,473	473	0,081	0,0832	83,2	0,096821992	
Kemal	10	1	9	2	2	40	200	10	13:00	0	0	1	12:58:27	41,10	1,46	1459,85		436	503	503	0,498	498	0,476376821	0,469614479	0,464614479	0,4352	435,2	0,067	0,0628	62,8	0,07767986
Kemal	10	1	9	2	2	40	200	10	14:00	1	1	14:00:05	39,60	1,52	1515,15		458	525	525	0,5312	531,2	0,48039142	0,48759988	0,49379988	0,4562	456,2	0,067	0,075	75	0,084413221	
Kemal	10	1	9	2	2	40	200	10	15:00	2	2	1	14:59:22	39,90	1,50	1503,76		458	535	535	0,5346	534,6	0,479564352	0,498269648	0,498269648	0,4566	456,6	0,077	0,078	78	0,08463354
Kemal	10	1	9	2	2	40	200	10	16:00	3	3	1	16:01:38	34,00	1,76	1764,71	409	455	535	0,535	527,4	0,498509067	0,479482233	0,471882233	0,4596	459,6	0,08	0,0678	67,8	0,090448354	
Kemal	10	1	9	2	2	40	200	10	17:00	4	4	1	17:03:12	38,50	1,56	1558,44		453	527	527	0,5264	526,4	0,483543277	0,486457023	0,485857023	0,4538	453,8	0,074	0,0726	72,6	0,084837042
Kemal	10	1	9	2	2	40	200	10	18:00	5	5	1	18:00:23	36,30	1,66	1567,46		465	552	552	0,5414	541,4	0,490719327	0,504268388	0,493668388	0,4648	464,8	0,087	0,0766	76,6	0,08983725
Kemal	10	1	9	2	2	40	200	10	19:00	6	6	1	19:01:19	35,10	1,71	1709,40		460	518	518	0,5226	522,6	0,494493984	0,466497316	0,471973159	0,4602	460,2	0,058	0,0624	62,4	0,088209599
Kemal	10	1	9	2	2	40	200	10	20:00	7	7	1	20:01:22	34,40	1,74	1744,19		446	520	520	0,5232	523,2	0,486242484	0,476748816	0,479948816	0,4478	447,8	0,074	0,0754	75,4	0,085324512
Kemal	10	1	9	2	2	40	200	10	21:00	8	8	1	20:59:47	38,00	1,58	1578,95		443	520	520	0,5254	525,4	0,485502299	0,477968301	0,483368301	0,4464	446,4	0,077	0,079	79	0,085231135
Kemal	10	1	9	2	2	40	200	10	22:00	9	9	1	22:00:58	37,10	1,62	1617,25		455	534	534	0,5328	532,8	0,487803819	0,489187481	0,487974811	0,455	455	0,079	0,0778	77,8	0,087473653
Kemal	10	1	9	2	2	40	200	10	23:00	10	10	1	22:58:16	36,60	1,64	1639,34	401	448	515	515	0,5112	511,2	0,489407813	0,468853487	0,467834847	0,4516	451,6	0,067	0,0596	59,6	0,08498754
Kemal	10	1	9	2	2	40	200	10	00:00	11	11	1	00:00:33	33,60	1,75	1758,71		455	534	534	0,5122	512,2	0,500034277	0,482957023	0,474517023	0,4566	456,6	0,082	0,0746	74,6	0,091640706
Kemal	10	1	9	2	2	40	200	10	01:00	12	12	1	01:00:28	37,00	1,59	1591,51	423	477	549	549	0,5512	551,2	0,504835864	0,487198356	0,489354456	0,4772	477,2	0,072	0,074	74	0,096835969
Kemal	10	1	9	3	2	40	200	10	02:00	13	13	1	02:05:28	37,70	1,59	1591,51		441	530	530	0,5234	523,4	0,474601946	0,498389543	0,491789543	0,4414	441,4	0,089	0,082	82	0,080955354
Kemal	10	1	9	3	2	40	200	10	03:00	14	14	1	03:00:53	35,00	1,74	1741,29		443	523	523	0,5224	522,4	0,479019849	0,486971451	0,486731451	0,4432	443,2	0,08	0,0792	79,2	0,082495637
Kemal	10	1	9	3	2	40	200	10	04:00	15	15	1	04:00:54	35,60	1,68	1675,98		461	545	545	0,5376	537,6	0,481798070	0,501693193	0,486123204	0,442	442	0,067	0,0648	64,8	0,081784498
Kemal	10	1	9	3	2	40	200	10	05:00	16	16	1	05:00:39	36,50	1,64	1636,84		464	530	530	0,526	526,2	0,49139142	0,489759988	0,477599888	0,453	453	0,079	0,073	73	0,087666667
Kemal	10	1	9	3	2	40	200	10	06:00	17	17	1	06:00:31	36,50	1,66	1685,39		451	512	512	0,524	524	0,492750971	0,500172853	0,487740329	0,4508	450,8	0,061	0,0732	73,2	0,0878226
Kemal	10	1	9	3	2	40	200	10	07:00	18	18	1	06:5																		

Horse	No	Stable	Age	Day	Gender	QTgain	QTfeed	HRfeed	Time	timex	tidxcopy	No	EKGtime	HR	RR	RRms	QTpeak1	Qtpeak2	QT	Qts	AvgQT	AvgQTms	StandardhorseRR>0.8021	QTC	AvgQTc	AvgQTcms	AvgQTpeak	AvgQTpeakms	Tptend	Tptendavg	TpTendavg(ms)	Bazett
Jagel	11	1	10	1	2	40	200	10	05:00:40	33,60,1,190	1785,71	427	473	540,0,0,533	533	0,500034277	0,482957023	0,475957023	0,4698	469,8	0,067	0,0632	63,2	0,091951236								
Jagel	11	1	10	1	2	40	200	10	06:00:17	31,32,1,190	1898,73	466	524,0,524	529,6	0,508239521	0,458751779	0,464351779	0,467	467	0,058	0,0626	62,6	0,094216162									
Jagel	11	1	10	1	2	40	200	10	08:00:19	32,30,1,181	1807,23	471	527,0,527	531,4	0,501596239	0,468395061	0,472795061	0,4692	469,2	0,056	0,0622	62,2	0,09225816									
Jagel	11	1	10	1	2	40	200	10	09:00:20	31,40,1,191	1910,83	425	467,536,0,536	539,6	0,519063062	0,459390398	0,463530938	0,4718	471,8	0,069	0,0678	67,8	0,099686909									
Jagel	11	1	10	1	2	40	200	10	09:00:20	31,40,1,191	1910,83	425	467,534,0,534	543,4	0,509117535	0,467873765	0,477273765	0,4716	471,6	0,067	0,0718	71,8	0,096973888									
Jagel	11	1	10	1	2	40	200	10	10:00:21	31,50,1,190	2197,80	434	478,533,0,533	536,6	0,52995186	0,44603944	0,44963944	0,49388	483,8	0,055	0,0528	52,8	0,10269974									
Jagel	11	1	10	1	2	40	200	10	11:00:22	32,50,2,11	2105,26	418	464,517,0,517	517,2	0,523233525	0,436757775	0,436957775	0,4676	467,6	0,053	0,0496	49,6	0,096880436									
Jagel	11	1	10	1	2	40	200	10	12:00:23	32,50,1,190	1967,21	430	474,541,0,541	5388,8	0,513211092	0,470780208	0,468580208	0,4728	472,8	0,067	0,066	66	0,09756132									
Jagel	11	1	10	2	2	40	200	10	13:00:0	0,0,1,12:57:48	35,70,1,68	1680,67	460,527,0,527	526,4	0,492408227	0,477583073	0,476983073	0,4628	462,8	0,067	0,0636	63,6	0,08810119									
Jagel	11	1	10	2	2	40	200	10	14:00:1	1,1,14:02:59	171,14,219	471,538,0,538	537,4	0,494848563	0,48542737	0,485,542731	0,471	471	0,067	0,0664	66,4	0,090837179										
Jagel	11	1	10	2	2	40	200	10	16:00:3	3,3,16:01:29	29,40,2,04	2040,82	436,527,0,527	528,4	0,518554685	0,451436615	0,452836615	0,4762	476,2	0,051	0,0522	52,2	0,097451638									
Jagel	11	1	10	2	2	40	200	10	17:00:4	4,4,17:01:31	33,30,1,180	1801,80	425,520,0,520	528,4	0,501022231	0,461789069	0,470189069	0,4668	466,8	0,053	0,0616	61,6	0,09156736									
Jagel	11	1	10	2	2	40	200	10	18:00:5	5,5,18:02:44	29,70,2,02	2020,20	429,529,0,529	526,6	0,517058087	0,454933213	0,452533213	0,473	473	0,058	0,0536	53,6	0,09662792									
Jagel	11	1	10	2	2	40	200	10	19:00:6	6,6,19:00:14	31,190,1,191	1910,83	434,534,0,534	534	0,509117535	0,467873765	0,467873765	0,473	473	0,061	0,061	61	0,095296386									
Jagel	11	1	10	2	2	40	200	10	20:00:7	7,7,1:20:01:42	34,10,1,176	1759,53	448,503,0,503	5118,8	0,498133355	0,447857945	0,456567945	0,4542	454,2	0,055	0,0576	57,6	0,087644182									
Jagel	11	1	10	2	2	40	200	10	21:00:8	8,8,1:21:02:14	37,6,1,160	1595,74	444,496,0,496	499,2	0,486242484	0,452748816	0,455948816	0,4396	439,6	0,052	0,0596	59,6	0,081410544									
Jagel	11	1	10	2	2	40	200	10	22:00:9	9,9,1:22:01:24	34,40,1,174	1744,19	455,526,0,526	520,8	0,497019327	0,471971973	0,466771973	0,4546	454,6	0,071	0,0662	66,2	0,088795663									
Jagel	11	1	10	2	2	40	200	10	23:00:10	10,10,1:23:01:11	35,56,1,169	1685,39	450,519,0,519	523,2	0,492750971	0,469240329	0,473440329	0,4514	451,4	0,069	0,0718	71,8	0,087685195									
Jagel	11	1	10	2	2	40	200	10	00:00:11	11,11,0:00:03:32	32,50,1,185	1846,15	411,524,0,524	525,4	0,504422189	0,462569111	0,463,5961108	0,4556	456,6	0,069	0,0688	68,8	0,092161257									
Jagel	11	1	10	2	2	40	200	10	01:00:12	12,12,1:01:04:47	29,80,2,01	2013,42	422,522,0,522	524,8	0,516565917	0,448425383	0,451,225384	0,4672	467,2	0,056	0,0576	57,6	0,096135922									
Jagel	11	1	10	2	2	40	200	10	02:00:13	13,13,1:01:08:26	36,30,1,165	1852,89	406,504,0,504	508,6	0,49039142	0,45659988	0,461,19988	0,4516	451,6	0,054	0,057	57	0,084415664									
Jagel	11	1	10	2	2	40	200	10	03:00:14	14,14,1:03:05:22	33,30,1,180	1801,80	441,510,0,510	505,8	0,501022231	0,451789069	0,447589069	0,4402	440,2	0,069	0,0656	65,6	0,087650966									
Jagel	11	1	10	2	2	40	200	10	04:00:15	15,15,1:04:05:24	35,30,1,180	1801,79	446,519,0,519	511,4	0,492750971	0,461,240329	0,461,403294	0,4534	453,4	0,06	0,0586	58	0,085710835									
Jagel	11	1	10	2	2	40	200	10	05:00:16	16,16,1:05:00:28	28,0,2,1	214,86	423,529,0,529	531	0,525962849	0,446028451	0,448,0284514	0,4714	471,4	0,062	0,0596	59,6	0,100349568									
Jagel	11	1	10	2	2	40	200	10	06:00:17	17,17,1:06:01:44	34,00,1,176	1761,71	453,517,0,517	512,6	0,498509067	0,461,482233	0,470872233	0,4542	454,2	0,064	0,0584	58,4	0,087910175									
Jagel	11	1	10	2	2	40	200	10	07:00:18	18,18,1:07:02:54	34,40,1,174	1744,19	450,515,0,515	518,2	0,497019327	0,464,71973	0,464,71973	0,4502	450,2	0,065	0,068	68	0,088352367									
Jagel	11	1	10	2	2	40	200	10	08:00:19	19,19,1:08:00:20	30,39,1,194	1914,75	430,529,0,529	513,6	0,511362294	0,460629006	0,463,229006	0,4706	470,6	0,055	0,061	61	0,095632459									
Jagel	11	1	10	2	2	40	200	10	09:00:20	20,20,1:09:01:11	31,30,1,192	1916,93	423,511,0,511	511,4	0,509560749	0,444430551	0,444,830551	0,4634	463,4	0,044	0,048	48	0,091408915									
Jagel	11	1	10	2	2	40	200	10	10:00:21	21,21,1:10:00:51	33,190,1,198	1920,80	422,522,0,522	525,8	0,514153796	0,450383704	0,454,6375038	0,469	469	0,055	0,0568	56,8	0,09552109									
Jagel	11	1	10	2	2	40	200	10	11:00:22	22,22,1:10:59:14	32,80,1,183	1829,27	460,529,0,529	528,2	0,503196299	0,468795002	0,467,995002	0,4624	462,4	0,069	0,0658	65,8	0,092227721									
Jagel	11	1	10	3	2	40	200	10	13:00:0	0,0,1,13:03:16	38,50,1,156	1558,44	431,488,0,488	486	0,48354277	0,447457023	0,453,6570229	0,4338	433,8	0,057	0,056	56	0,078325992									
Jagel	11	1	10	3	2	40	200	10	14:00:1	1,1,13:59:40	32,80,1,183	1829,27	421,512,0,512	514,8	0,503196298	0,451795002	0,454,595002	0,463,2	463,2	0,052	0,0516	51,6	0,089887979									
Jagel	11	1	10	3	2	40	200	10	15:00:2	2,2,15:03:21	36,50,1,164	1643,84	409,500,0,500	506,4	0,489733886	0,453257414	0,459,657414	0,4516	451,6	0,05	0,0548	54,8	0,083819924									
Jagel	11	1	10	3	2	40	200	10	16:00:3	3,3,16:02:26	34,10,1,174	1744,19	409,505,0,505	507	0,497019327	0,455971973	0,452,971973	0,4484	448,4	0,06	0,0586	58,6	0,086442783									
Jagel	11	1	10	3	2	40	200	10	17:00:4	4,4,17:01:27	34,10,1,176	1759,53	441,507,0,507	504,8	0,498133355	0,44758945	0,449,6557945	0,4406	440,6	0,066	0,0642	64,2	0,079647542									
Jagel	11	1	10	3	2	40	200	10	18:00:5	5,5,17:01:06	34,10,1,176	1759,53	444,505,0,505	504	0,511819991	0,451671309	0,453,171309	0,4476	447,6	0,057	0,0564	64,4	0,090814496									
Jagel	11	1	10	3	2	40	200	10	19:00:6	6,6,17:01:05	34,10,1,176	1759,53	446,502,0,502	504,8	0,519061735	0,450929555	0,459,9295503	0,4508	450,8	0,048	0,0562	56,2	0,084034432									
Jagel	11	1	10	3	2	40	200	10	20:00:7	7,7,18:01:03	37,40,1,160	1604,28	408,505,0,505	501,8	0,516077039	0,426914261	0,428714261	0,4526	452,6	0,049	0,0492	49,2	0,091768802									
Jagel	11	1	10	3	2	40	200	10	21:00:8	8,8,18:01:03	37,40,1,160	1604,28	408,506,0,506	506,2	0,516565917	0,434180178	0,439,380178	0,4418	441,8	0,049	0,0554	55,4	0,086031578									
Duel	12	1	15	1	2	40	200	10	13:00:0	0,0,1,13:00:23	35,50,1,160	1690,14	462,554,0,554	545	0,493095645	0,503895655	0															

Horse	No	Stable	Age	Day	Gender	QTgain	QTfeed	HRfeed	Time	timex	tidxcopy	No	EKGtime	HR	RR	RRms	QTpeak1	Qtpeak2	QT	Qts	AvgQT	AvgQTms	StandardhorseRR>0.8021	QTc	AvgQTc	AvgQTcms	AvgQtpeakms	Tptend	Tptdavg	TpTendavg(ms)	Bazett
Duel	12	1	15	2	2	40	200	10	14:00:10	36,70	1,63	1634,88		458	540	0,54	0,5326	532,6	0,489083518	0,493907782	0,486,507782	0,4546	454,6	0,082	0,078	78	0,087916042				
Duel	12	1	15	2	2	40	200	10	15:00:24	2	2	1	15:03:40	36,20	1,66	1657,46		455	532	0,532	0,5368	536,8	0,490722912	0,484268388	0,489068388	0,4554	455,4	0,077	0,0814	81,4	0,085219179
Duel	12	1	15	2	2	40	200	10	16:00:00	3	3	1	16:01:06	38,70	1,55	1550,39		453	527	0,527	0,5294	529,4	0,48294956	0,48704174	0,4894174	0,4502	450,2	0,074	0,0792	79,2	0,085099783
Duel	12	1	15	2	2	40	200	10	17:00:44	4	4	1	17:01:20	37,50	1,60	1600,00		443	523	0,523	0,5244	524,4	0,48655142	0,47943988	0,48083988	0,4442	444,2	0,08	0,0802	80,2	0,085634161
Duel	12	1	15	2	2	40	200	10	18:00:00	5	5	1	18:00:47	34,70	1,73	1729,11	413,00	458	530	0,53	0,5358	535,8	0,495924561	0,47706739	0,482866739	0,4559	459	0,072	0,0768	76,8	0,090957386
Duel	12	1	15	2	2	40	200	10	19:00:00	6	6	1	18:59:39	37,00	1,62	1621,62		450	539	0,539	0,5344	534,4	0,49812115	0,489387015	0,48927015	0,4498	449,8	0,089	0,0846	84,6	0,087854819
Duel	12	1	15	2	2	40	200	10	20:00:00	7	7	1	20:01:00	36,10	1,66	1662,05		446	523	0,523	0,5286	528,6	0,49105624	0,47493506	0,48053506	0,4466	446,6	0,077	0,082	82	0,087977893
Duel	12	1	15	2	2	40	200	10	21:00:00	8	8	1	21:02:40	37,80	1,59	1587,30		446	529	0,529	0,529	529	0,485629515	0,486361785	0,486561785	0,4446	446	0,083	0,083	83	0,086041856
Duel	12	1	15	2	2	40	200	10	22:00:00	9	9	1	22:00:54	36,60	1,64	1639,34		450	523	0,523	0,5292	529,2	0,489407813	0,476583487	0,482783487	0,4484	448,4	0,073	0,0808	80,8	0,087474062
Duel	12	1	15	2	2	40	200	10	23:00:00	10	10	1	22:59:24	33,80	1,78	1775,15	408,00	453	520	0,52	0,5248	524,8	0,4926716	0,46372414	0,46852414	0,4546	454,6	0,067	0,0702	70,2	0,090268344
Duel	12	1	15	2	2	40	200	10	00:00:00	11	11	1	00:00:34	33,70	1,78	1780,42	404,00	460	532	0,532	0,529	529	0,49964958	0,47534172	0,47234172	0,4596	459,6	0,072	0,0694	69,4	0,091125667
Duel	12	1	15	2	2	40	200	10	01:00:00	12	12	1	01:00:44	34,50	1,74	1739,13		451	535	0,535	0,5404	540,4	0,49665229	0,48133901	0,48673901	0,4552	455,2	0,084	0,0852	85,2	0,092003806
Duel	12	1	15	2	2	40	200	10	02:00:00	13	13	1	01:59:16	36,30	1,65	1652,89		453	518	0,518	0,5328	532,8	0,49039142	0,47059988	0,4859988	0,4546	454,6	0,065	0,0782	78,2	0,088432297
Duel	12	1	15	2	2	40	200	10	03:00:14	14	14	1	02:58:04	37,40	1,60	1604,28	399,00	446	518	0,518	0,5184	518,4	0,486862008	0,474129292	0,474529292	0,4456	445,6	0,072	0,0728	72,8	0,0874767464
Duel	12	1	15	2	2	40	200	10	04:00:00	15	15	1	04:01:12	33,90	1,78	1785,71	416,00	463	539	0,539	0,5362	536,2	0,500034277	0,481957023	0,479157023	0,4578	457,8	0,079	0,0788	78,8	0,088746862
Duel	12	1	15	2	2	40	200	10	05:00:00	16	16	1	05:01:12	33,90	1,79	1785,71		458	534	0,534	0,5382	538,2	0,4884402	0,4885511	0,4927511	0,4557	457,8	0,076	0,0804	80,4	0,088599345
Duel	12	1	15	2	2	40	200	10	06:00:00	17	17	1	06:00:27	36,90	1,63	1626,02		461	534	0,534	0,5414	541,4	0,495205174	0,481786126	0,489186126	0,4608	460,8	0,073	0,0806	80,6	0,091643417
Duel	12	1	15	2	2	40	200	10	08:00:00	19	19	1	07:58:35	35,90	1,67	1671,31		461	540	0,54	0,5372	537,2	0,491728467	0,491262833	0,488462833	0,4596	459,6	0,079	0,0776	77,6	0,089657945
Duel	12	1	15	2	2	40	200	10	09:00:00	20	20	1	09:03:57	35,60	1,69	1685,39		468	550	0,55	0,5466	546,6	0,492750971	0,500240329	0,496840329	0,4692	469,2	0,082	0,0774	77,4	0,091610368
Duel	12	1	15	2	2	40	200	10	10:00:21	21	21	1	10:00:45	32,60	1,84	1840,49	414,00	470	539	0,539	0,5414	541,4	0,504011052	0,4779980248	0,480380248	0,4682	468,2	0,069	0,0732	73,2	0,094820740
Duel	12	1	15	2	2	40	200	10	11:00:00	22	22	1	11:01:35	35,15	1,71	1709,40		458	542	0,542	0,5366	536,8	0,494493984	0,490497316	0,485297316	0,4584	458,4	0,084	0,0784	78,4	0,090606415
Duel	12	1	15	2	2	40	200	10	12:00:23	23	23	1	11:59:27	35,60	1,68	1675,98		456	530	0,53	0,5322	532,2	0,492067398	0,480923902	0,483123902	0,4564	456,4	0,074	0,0758	75,8	0,08894742
Duel	12	1	15	3	2	40	200	10	13:00:00	0	0	1	12:56:45	34,90	1,72	1719,20	421,00	470	549	0,549	0,5466	546,6	0,495205174	0,496786126	0,494386126	0,4688	468,8	0,079	0,0778	77,8	0,09254536
Duel	12	1	15	3	2	40	200	10	14:00:00	1	1	1	14:00:06	39,70	1,51	1511,34		448	534	0,534	0,5314	531,4	0,480114342	0,496876958	0,494276958	0,4464	446,4	0,086	0,085	85	0,084338582
Duel	12	1	15	3	2	40	200	10	15:00:00	2	2	1	15:00:37	36,20	1,66	1657,46	408,00	460	535	0,535	0,5354	535,4	0,49072212	0,487268388	0,487668388	0,4594	459,4	0,075	0,076	76	0,088986491
Duel	12	1	15	3	2	40	200	10	16:00:00	3	3	1	16:00:00	34,80	1,72	1724,14	419,00	466	550	0,55	0,5426	542,6	0,495563834	0,497427466	0,490027466	0,4666	466	0,084	0,0766	76,6	0,09197314
Duel	12	1	15	3	2	40	200	10	17:00:00	4	4	1	17:00:07	36,40	1,65	1648,35		455	552	0,552	0,5446	544,6	0,49006175	0,50402955	0,49752955	0,4568	456,8	0,097	0,0878	87,8	0,09026571
Duel	12	1	15	3	2	40	200	10	18:00:00	5	5	1	18:00:42	34,10	1,76	1759,53	423,00	468	540	0,54	0,5418	541,8	0,498133355	0,484857945	0,486657945	0,4666	466	0,072	0,0758	75,8	0,09278159
Duel	12	1	15	3	2	40	200	10	19:00:00	6	6	1	19:01:45	33,90	1,81	1807,23	423,00	471	544	0,544	0,5445	545	0,501586239	0,485395061	0,486395061	0,47076	470,6	0,073	0,0744	74,4	0,094586131
Duel	12	1	15	3	2	40	200	10	20:00:00	7	7	1	19:59:48	38,70	1,55	1550,39		441	529	0,529	0,5292	529,2	0,48294956	0,48904174	0,48924174	0,4443	443	0,088	0,0862	86,2	0,085067634
Duel	12	1	15	3	2	40	200	10	21:00:00	8	8	1	20:59:33	37,30	1,61	1608,58		443	518	0,518	0,5184	518,4	0,487174262	0,473817038	0,474217038	0,4443	443	0,075	0,0754	75,4	0,084881017
Duel	12	1	15	3	2	40	200	10	22:00:00	9	9	1	22:00:32	34,90	1,72	1719,20	426,00	470	552	0,552	0,5492	549,2	0,495205174	0,499786126	0,49696126	0,4674	467,4	0,082	0,0818	81,8	0,092964645
Duel	12	1	15	3	2	40	200	10	23:00:00	10	10	1	23:00:25	34,30	1,75	1749,27	413,00	465	544	0,544	0,5378	537,8	0,497388505	0,489602795	0,483,402795	0,4658	465,8	0,079	0,072	72	0,091827707
Duel	12	1	15	3	2	40	200	10	00:00:00	11	11	1	00:00:52	32,60	1,84	1840,49	424,00	470	535	0,535	0,5394	539,4	0,504011052	0,473980248	0,478,380248	0,4672	467,2	0,065	0,0722	72,2	0,09447179
Duel	12	1	15	3	2	40	200	10	01:00:00	12	12	1	01:00:																		