STATISTICS 3
WS 2017 (Mag. Thomas Forstner)

Course-Number: 366.542

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10) In a clinical experiment five patients who suffered from high blood pressure were examined in the morning, at midday and in the evening. The research question is, if the resting heart rates vary over time.

	Resting heart rate [min^{-1}]				
Morning	80	77	70	72	75
Midday	79	80	81	80	79
Evening	76	76	74	74	74

(Normal-distribution can be assumed.)

Test for a global difference over time (type I error = 5%). If a significant global difference exists use an appropriate method to conduct multiple pairwise comparisons.

11) The lifetime of batteries in hours is compared by material type (A, B or C) and operating temperature: Medium (20˚C) or High (30˚C). Twelve batteries are randomly selected to each temperature and randomly allocated to the material type. The resulting lifetime of all 24 batteries is shown in the table below:

		Material type		
		A	**B**	**C**
Temperature	**Medium (20˚C)**	34, 40, 80, 75	136, 122, 106, 115	174, 120, 150, 139
	High (30˚C)	20, 70, 82, 58	25, 70, 58, 45	96, 104, 82, 60

(Normal-distribution and variance homogeneity can be assumed.)

Test for a global difference in the lifetime of batteries (type I error = 5%) regarding temperature, material type and the interaction effect of temperature and material type?