

**Analysis Report**

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SAMPLE REPORT - Rafael Data Analysis Portfolio

## Descriptive Statistics

The table below shows means and standard deviations of all measurements segmented by Group and Time. The last column shows the percentage change of the experimental groups compared to the control group.

Variable	Group	Time	Mean	SD	% Diff to CON
APHV	CON	Pre	11.833	0.560	-
	CON	Post	11.840	0.556	-
	PLYO	Pre	11.987	0.621	1.3%
	PLYO	Post	12.033	0.642	1.6%
	Sprint	Pre	11.766	0.503	-0.6%
	Sprint	Post	11.740	0.667	-0.8%
BBJ	CON	Pre	148.130	19.867	-
	CON	Post	139.870	22.650	-
	PLYO	Pre	187.973	20.415	26.9%
	PLYO	Post	184.839	18.191	32.2%
	Sprint	Pre	156.600	22.275	5.7%
	Sprint	Post	158.384	29.151	13.2%
BBJ_Rel	CON	Pre	2.076	0.218	-
	CON	Post	1.956	0.253	-
	PLYO	Pre	2.334	0.313	12.4%
	PLYO	Post	2.288	0.284	17.0%
	Sprint	Pre	2.078	0.190	0.1%
	Sprint	Post	2.078	0.302	6.2%
BF	CON	Pre	19.600	8.048	-
	CON	Post	19.700	7.936	-
	PLYO	Pre	23.745	6.090	21.2%
	PLYO	Post	23.750	6.133	20.6%
	Sprint	Pre	19.913	6.644	1.6%
	Sprint	Post	19.950	6.774	1.3%
Bil120	CON	Pre	16.119	6.316	-
	CON	Post	16.944	5.181	-
	PLYO	Pre	18.956	4.397	17.6%
	PLYO	Post	20.790	5.316	22.7%
	Sprint	Pre	14.011	3.168	-13.1%
	Sprint	Post	14.908	2.660	-12.0%
Bil120_rel	CON	Pre	28.682	5.594	-
	CON	Post	30.470	3.942	-
	PLYO	Pre	27.269	5.156	-4.9%
	PLYO	Post	29.351	6.190	-3.7%
	Sprint	Pre	24.871	3.159	-13.3%
	Sprint	Post	26.585	4.857	-12.8%
Bil132	CON	Pre	19.978	7.026	-
	CON	Post	20.105	7.439	-
	PLYO	Pre	22.793	4.907	14.1%
	PLYO	Post	24.452	5.242	21.6%
	Sprint	Pre	17.133	4.063	-14.2%
	Sprint	Post	18.149	3.328	-9.7%
Bil132_rel	CON	Pre	35.674	4.794	-
	CON	Post	35.924	6.785	-
	PLYO	Pre	32.875	6.095	-7.8%
	PLYO	Post	34.610	6.296	-3.7%
	Sprint	Pre	30.426	4.562	-14.7%

Variable	Group	Time	Mean	SD	% Diff to CON
BM	Sprint	Post	32.121	4.614	-10.6%
	CON	Pre	40.064	13.043	-
	CON	Post	40.136	13.013	-
	PLYO	Pre	56.731	10.785	41.6%
	PLYO	Post	57.855	11.331	44.1%
	Sprint	Pre	43.347	12.633	8.2%
	Sprint	Post	44.267	12.445	10.3%
HWI	CON	Pre	22.310	3.236	-
	CON	Post	22.310	3.236	-
	PLYO	Pre	27.736	2.333	24.3%
	PLYO	Post	28.023	2.271	25.6%
	Sprint	Pre	24.581	2.679	10.2%
	Sprint	Post	24.438	2.609	9.5%
HWT	CON	Pre	25.720	3.997	-
	CON	Post	25.740	3.995	-
	PLYO	Pre	31.155	2.280	21.1%
	PLYO	Post	31.382	2.310	21.9%
	Sprint	Pre	27.069	3.168	5.2%
	Sprint	Post	27.156	3.346	5.5%
LL	CON	Pre	71.390	6.769	-
	CON	Post	71.560	6.810	-
	PLYO	Pre	80.923	4.955	13.4%
	PLYO	Post	81.155	5.112	13.4%
	Sprint	Pre	75.263	6.687	5.4%
	Sprint	Post	76.100	6.888	6.3%
Offset	CON	Pre	-0.932	2.014	-
	CON	Post	-0.921	2.013	-
	PLYO	Pre	1.553	1.004	-266.6%
	PLYO	Post	1.683	1.003	-282.7%
	Sprint	Pre	-0.255	1.857	-72.7%
	Sprint	Post	-0.064	1.875	-93.1%
PAH	CON	Pre	172.731	8.115	-
	CON	Post	172.784	8.140	-
	PLYO	Pre	170.893	6.199	-1.1%
	PLYO	Post	170.735	6.556	-1.2%
	Sprint	Pre	172.258	4.726	-0.3%
	Sprint	Post	171.370	4.801	-0.8%
PercPAH	CON	Pre	84.564	7.637	-
	CON	Post	84.596	7.639	-
	PLYO	Pre	96.492	3.226	14.1%
	PLYO	Post	96.875	3.137	14.5%
	Sprint	Pre	88.790	8.367	5.0%
	Sprint	Post	89.602	7.454	5.9%
SBJL	CON	Pre	124.530	22.042	-
	CON	Post	123.770	25.407	-
	PLYO	Pre	166.100	18.302	33.4%
	PLYO	Post	168.816	15.605	36.4%
	Sprint	Pre	139.181	20.069	11.8%
	Sprint	Post	145.500	22.722	17.6%
SBJL_Rel	CON	Pre	1.742	0.232	-
	CON	Post	1.726	0.266	-
	PLYO	Pre	2.060	0.262	18.3%
	PLYO	Post	2.088	0.226	21.0%
	Sprint	Pre	1.851	0.210	6.3%

Variable	Group	Time	Mean	SD	% Diff to CON
SBJR	Sprint	Post	1.910	0.218	10.7%
	CON	Pre	124.440	23.344	-
	CON	Post	122.490	25.218	-
	PLYO	Pre	160.977	18.395	29.4%
	PLYO	Post	163.852	13.386	33.8%
	Sprint	Pre	139.613	23.189	12.2%
	Sprint	Post	143.172	26.241	16.9%
SBJR_Rel	CON	Pre	1.741	0.264	-
	CON	Post	1.704	0.244	-
	PLYO	Pre	1.996	0.267	14.7%
	PLYO	Post	2.028	0.226	19.0%
	Sprint	Pre	1.855	0.262	6.6%
	Sprint	Post	1.876	0.249	10.0%
SH	CON	Pre	74.620	7.755	-
	CON	Post	74.550	7.731	-
	PLYO	Pre	83.936	4.009	12.5%
	PLYO	Post	84.209	4.152	13.0%
	Sprint	Pre	78.094	6.980	4.7%
	Sprint	Post	78.063	6.935	4.7%
Stature	CON	Pre	146.010	13.982	-
	CON	Post	146.110	14.013	-
	PLYO	Pre	164.859	7.489	12.9%
	PLYO	Post	165.364	7.681	13.2%
	Sprint	Pre	153.356	12.940	5.0%
	Sprint	Post	154.163	12.941	5.5%
TBJ	CON	Pre	421.810	63.483	-
	CON	Post	432.860	71.790	-
	PLYO	Pre	568.173	56.570	34.7%
	PLYO	Post	564.748	52.652	30.5%
	Sprint	Pre	488.406	60.772	15.8%
	Sprint	Post	478.109	76.030	10.5%
TBJ_Rel	CON	Pre	5.921	0.792	-
	CON	Post	6.049	0.758	-
	PLYO	Pre	7.054	0.869	19.1%
	PLYO	Post	6.988	0.816	15.5%
	Sprint	Pre	6.491	0.573	9.6%
	Sprint	Post	6.286	0.829	3.9%
TBJL	CON	Pre	360.270	79.077	-
	CON	Post	379.460	93.755	-
	PLYO	Pre	484.577	56.311	34.5%
	PLYO	Post	494.675	61.832	30.4%
	Sprint	Pre	397.819	70.814	10.4%
	Sprint	Post	412.772	63.236	8.8%
TBJL_Rel	CON	Pre	5.034	0.868	-
	CON	Post	5.279	1.005	-
	PLYO	Pre	6.011	0.807	19.4%
	PLYO	Post	6.118	0.856	15.9%
	Sprint	Pre	5.274	0.705	4.8%
	Sprint	Post	5.413	0.575	2.5%
TBJR	CON	Pre	363.100	75.388	-
	CON	Post	382.150	95.969	-
	PLYO	Pre	484.855	58.274	33.5%
	PLYO	Post	488.571	50.100	27.8%
	Sprint	Pre	400.263	79.746	10.2%

Variable	Group	Time	Mean	SD	% Diff to CON
TBJR_Rel	Sprint	Post	420.922	73.955	10.1%
	CON	Pre	5.072	0.794	-
	CON	Post	5.307	0.977	-
	PLYO	Pre	6.024	0.894	18.8%
	PLYO	Post	6.046	0.765	13.9%
	Sprint	Pre	5.306	0.857	4.6%
	Sprint	Post	5.529	0.799	4.2%
UniL150	CON	Pre	15.386	4.368	-
	CON	Post	14.772	4.833	-
	PLYO	Pre	18.553	3.135	20.6%
	PLYO	Post	19.331	3.542	30.9%
	Sprint	Pre	14.405	3.277	-6.4%
	Sprint	Post	14.599	3.169	-1.2%
UniL150_rel	CON	Pre	27.787	2.712	-
	CON	Post	26.641	4.936	-
	PLYO	Pre	26.699	3.482	-3.9%
	PLYO	Post	27.215	2.866	2.2%
	Sprint	Pre	25.392	1.724	-8.6%
	Sprint	Post	25.526	1.933	-4.2%
UniL180	CON	Pre	19.047	5.812	-
	CON	Post	18.393	5.981	-
	PLYO	Pre	23.722	4.019	24.5%
	PLYO	Post	24.489	4.799	33.1%
	Sprint	Pre	19.171	4.938	0.7%
	Sprint	Post	19.477	4.512	5.9%
UniL180_rel	CON	Pre	34.448	6.014	-
	CON	Post	33.189	6.416	-
	PLYO	Pre	34.193	4.988	-0.7%
	PLYO	Post	34.461	4.747	3.8%
	Sprint	Pre	33.733	4.310	-2.1%
	Sprint	Post	33.924	2.309	2.2%
UniR150	CON	Pre	14.698	4.753	-
	CON	Post	14.931	4.799	-
	PLYO	Pre	18.609	2.949	26.6%
	PLYO	Post	18.983	3.175	27.1%
	Sprint	Pre	14.354	3.395	-2.3%
	Sprint	Post	14.463	3.024	-3.1%
UniR150_rel	CON	Pre	26.401	3.733	-
	CON	Post	26.858	4.379	-
	PLYO	Pre	26.803	3.419	1.5%
	PLYO	Post	26.765	2.351	-0.3%
	Sprint	Pre	25.283	1.709	-4.2%
	Sprint	Post	25.322	1.837	-5.7%
UniR180	CON	Pre	19.669	6.276	-
	CON	Post	19.567	5.702	-
	PLYO	Pre	23.750	3.927	20.8%
	PLYO	Post	24.881	5.485	27.2%
	Sprint	Pre	19.330	4.776	-1.7%
	Sprint	Post	18.776	4.236	-4.0%
UniR180_rel	CON	Pre	35.361	5.511	-
	CON	Post	35.558	6.498	-
	PLYO	Pre	34.256	4.872	-3.1%
	PLYO	Post	34.901	4.454	-1.8%
	Sprint	Pre	34.162	4.924	-3.4%

Variable	Group	Time	Mean	SD	% Diff to CON
	Sprint	Post	32.856	3.295	-7.6%

### **Normality Assessment**

Skewness and Kurtosis were relatively around a normal distribution with values close to 0. The results of Shapiro Wilk's tests are mixed. Some variable obtained results suggesting normal distributions ( $p > 0.05$ ) while other have not ( $p < 0.05$ ).

Group	Skewness	Kurtosis	Shapiro_Wilk_F	Shapiro_Wilk_p_value
Stature	-0.549	-0.161	0.942	0.000
SH	-0.481	-0.836	0.926	0.000
LL	-0.389	0.233	0.975	0.069
BM	0.093	-0.445	0.979	0.121
BF	0.308	-0.585	0.964	0.009
HWI	-0.243	-0.693	0.974	0.054
HWT	-0.439	-0.760	0.960	0.005
Age	-0.292	-1.077	0.943	0.000
PAH	0.797	0.599	0.948	0.001
PercPAH	-0.736	-0.896	0.848	0.000
Offset	-0.520	-0.930	0.927	0.000
APHV	-0.195	-0.187	0.969	0.021
Bil120	0.881	0.614	0.943	0.000
Bil132	0.704	0.355	0.964	0.009
UniR150	0.105	-0.739	0.974	0.057
UniL150	0.187	-0.670	0.981	0.172
UniR180	0.351	0.239	0.976	0.081
UniL180	-0.113	-0.961	0.977	0.086
BBJ	-0.373	-0.405	0.980	0.156
SBJR	-0.495	-0.405	0.968	0.020
SBJL	-0.411	-0.521	0.970	0.027
TBJ	-0.371	-0.461	0.976	0.076
TBJR	-0.491	-0.239	0.972	0.040
TBJL	-0.353	-0.607	0.975	0.062
Bil120_rel	0.313	-0.397	0.982	0.195
Bil132_rel	0.234	-0.160	0.991	0.786
UniR150_rel	0.664	-0.182	0.954	0.002
UniL150_rel	0.517	-0.427	0.964	0.011
UniR180_rel	0.275	-0.613	0.976	0.079
UniL180_rel	-0.089	-0.943	0.974	0.053
BBJ_Rel	-0.129	0.140	0.987	0.450
SBJR_Rel	-0.305	-0.066	0.982	0.222
SBJL_Rel	-0.333	-0.013	0.983	0.258
TBJ_Rel	-0.143	-0.105	0.995	0.987
TBJR_Rel	-0.407	0.785	0.979	0.116
TBJL_Rel	-0.258	0.194	0.986	0.410

## Linear Mixed Models

In the field of sports sciences, linear mixed models (LMM) are increasingly applied to investigate the effects of interventions on athletes due to their robustness and flexibility. LMMs can handle data where responses are not independent, such as repeated measures from the same subjects, which is a common scenario in intervention studies. One of the key strengths of LMMs is their robustness to violations of the normality assumption, which allows for more reliable inferences when data may not perfectly follow a Gaussian distribution.

The table below presents the results of an intervention study where LMMs were used to analyze the impact of the intervention across different groups (CON, PLYO, Sprint) and time points (Pre, Post), while also considering the maturation status (MatStatus). Subjects were included as random effects in the models.

Variable	term	estimate	std.error	statistic	df	p.value
Stature	(Intercept)	149.603	5.240	28.549	42.021	0.000
	TimePost	0.100	0.167	0.600	45.000	0.552
	GroupPLYO	7.192	3.647	1.972	42.064	0.055
	GroupSprint	2.117	3.455	0.613	42.080	0.543
	MatStatusLPUB	11.097	5.367	2.068	42.000	0.045
	MatStatusMPUB	6.837	6.098	1.121	42.000	0.269
	MatStatusPRE	-8.303	5.186	-1.601	42.000	0.117
	TimePost:GroupPLYO	0.405	0.201	2.011	45.000	0.050
	TimePost:GroupSprint	0.706	0.213	3.322	45.000	0.002
SH	(Intercept)	74.946	2.701	27.750	42.215	0.000
	TimePost	-0.070	0.273	-0.256	45.000	0.799
	GroupPLYO	2.537	1.884	1.347	42.647	0.185
	GroupSprint	0.539	1.787	0.302	42.805	0.764
	MatStatusLPUB	8.148	2.763	2.949	42.000	0.005
	MatStatusMPUB	5.921	3.139	1.886	42.000	0.066
	MatStatusPRE	-2.794	2.670	-1.046	42.000	0.301
	TimePost:GroupPLYO	0.343	0.329	1.041	45.000	0.304
	TimePost:GroupSprint	0.039	0.348	0.111	45.000	0.912
LL	(Intercept)	74.657	3.306	22.583	42.167	0.000
	TimePost	0.170	0.294	0.577	45.000	0.567
	GroupPLYO	4.655	2.304	2.020	42.502	0.050
	GroupSprint	1.578	2.185	0.722	42.625	0.474
	MatStatusLPUB	2.949	3.383	0.872	42.000	0.388
	MatStatusMPUB	0.916	3.844	0.238	42.000	0.813
	MatStatusPRE	-5.510	3.269	-1.685	42.000	0.099
	TimePost:GroupPLYO	0.062	0.355	0.174	45.000	0.863
	TimePost:GroupSprint	0.667	0.375	1.778	45.000	0.082
BM	(Intercept)	43.136	6.317	6.828	42.048	0.000
	TimePost	0.073	0.303	0.240	45.000	0.812
	GroupPLYO	5.862	4.397	1.333	42.145	0.190
	GroupSprint	-1.046	4.167	-0.251	42.181	0.803
	MatStatusLPUB	10.920	6.469	1.688	42.000	0.099
	MatStatusMPUB	3.519	7.350	0.479	42.000	0.635
	MatStatusPRE	-7.509	6.251	-1.201	42.000	0.236

Variable	term	estimate	std.error	statistic	df	p.value
BF	TimePost:GroupPLYO	1.051	0.366	2.875	45.000	0.006
	TimePost:GroupSprint	0.848	0.386	2.194	45.000	0.033
	(Intercept)	20.722	4.262	4.863	42.154	0.000
	TimePost	0.100	0.364	0.274	45.000	0.785
	GroupPLYO	1.526	2.970	0.514	42.462	0.610
	GroupSprint	-0.502	2.816	-0.178	42.576	0.859
	MatStatusLPUB	2.481	4.361	0.569	42.000	0.572
	MatStatusMPUB	-1.154	4.955	-0.233	42.000	0.817
	MatStatusPRE	-2.312	4.214	-0.549	42.000	0.586
	TimePost:GroupPLYO	-0.095	0.440	-0.217	45.000	0.829
HWI	TimePost:GroupSprint	-0.063	0.465	-0.135	45.000	0.894
	(Intercept)	22.837	1.360	16.790	43.225	0.000
	TimePost	0.000	0.326	0.000	45.000	1.000
	GroupPLYO	3.009	0.960	3.135	45.680	0.003
	GroupSprint	1.141	0.914	1.249	46.577	0.218
	MatStatusLPUB	2.466	1.383	1.782	42.000	0.082
	MatStatusMPUB	2.020	1.572	1.286	42.000	0.206
	MatStatusPRE	-1.457	1.337	-1.090	42.000	0.282
	TimePost:GroupPLYO	0.286	0.393	0.728	45.000	0.470
	TimePost:GroupSprint	-0.144	0.416	-0.346	45.000	0.731
HWT	(Intercept)	26.299	1.561	16.845	42.385	0.000
	TimePost	0.020	0.211	0.095	45.000	0.925
	GroupPLYO	2.556	1.091	2.343	43.156	0.024
	GroupSprint	0.128	1.036	0.123	43.439	0.902
	MatStatusLPUB	3.075	1.596	1.927	42.000	0.061
	MatStatusMPUB	1.710	1.813	0.943	42.000	0.351
	MatStatusPRE	-1.706	1.542	-1.106	42.000	0.275
	TimePost:GroupPLYO	0.207	0.254	0.815	45.000	0.419
	TimePost:GroupSprint	0.068	0.269	0.251	45.000	0.803
Age	(Intercept)	10.386	0.749	13.867	42.002	0.000
	TimePost	0.017	0.008	2.188	45.000	0.034
	GroupPLYO	0.378	0.521	0.725	42.007	0.473
	GroupSprint	-0.193	0.494	-0.390	42.009	0.698
	MatStatusLPUB	3.434	0.767	4.476	42.000	0.000
	MatStatusMPUB	1.805	0.872	2.071	42.000	0.045
	MatStatusPRE	-0.234	0.741	-0.316	42.000	0.754
	TimePost:GroupPLYO	0.159	0.010	16.705	45.000	0.000
	TimePost:GroupSprint	0.159	0.010	15.785	45.000	0.000
PAH	(Intercept)	169.332	4.025	42.073	42.513	0.000
	TimePost	0.053	0.627	0.084	45.000	0.933
	GroupPLYO	-0.228	2.817	-0.081	43.542	0.936
	GroupSprint	0.307	2.675	0.115	43.919	0.909
	MatStatusLPUB	1.167	4.110	0.284	42.000	0.778
	MatStatusMPUB	2.978	4.670	0.638	42.000	0.527
	MatStatusPRE	4.522	3.972	1.139	42.000	0.261
	TimePost:GroupPLYO	-0.210	0.756	-0.278	45.000	0.782
	TimePost:GroupSprint	-0.941	0.799	-1.177	45.000	0.245
PercPAH	(Intercept)	86.528	2.137	40.483	42.332	0.000
	TimePost	0.031	0.268	0.117	45.000	0.908
	GroupPLYO	4.086	1.493	2.737	42.998	0.009
	GroupSprint	0.825	1.416	0.582	43.242	0.564
	MatStatusLPUB	7.969	2.185	3.647	42.000	0.001
	MatStatusMPUB	4.548	2.483	1.832	42.000	0.074
	MatStatusPRE	-5.082	2.111	-2.407	42.000	0.021



Variable	term	estimate	std.error	statistic	df	p.value
	TimePost:GroupPLYO	0.351	0.323	1.086	45.000	0.283
	TimePost:GroupSprint	0.781	0.342	2.283	45.000	0.027
Offset	(Intercept)	-0.855	0.612	-1.397	42.148	0.170
	TimePost	0.011	0.051	0.206	45.000	0.838
	GroupPLYO	0.564	0.426	1.322	42.445	0.193
	GroupSprint	-0.073	0.404	-0.181	42.554	0.857
	MatStatusLPUB	2.385	0.626	3.808	42.000	0.000
	MatStatusMPUB	1.201	0.711	1.688	42.000	0.099
	MatStatusPRE	-0.791	0.605	-1.308	42.000	0.198
	TimePost:GroupPLYO	0.120	0.062	1.937	45.000	0.059
	TimePost:GroupSprint	0.180	0.065	2.751	45.000	0.009
APHV	(Intercept)	11.234	0.356	31.577	42.424	0.000
	TimePost	0.007	0.050	0.133	45.000	0.895
	GroupPLYO	-0.185	0.249	-0.744	43.275	0.461
	GroupSprint	-0.115	0.236	-0.487	43.587	0.629
	MatStatusLPUB	1.045	0.364	2.876	42.000	0.006
	MatStatusMPUB	0.590	0.413	1.429	42.000	0.160
	MatStatusPRE	0.556	0.351	1.584	42.000	0.121
	TimePost:GroupPLYO	0.039	0.061	0.643	45.000	0.524
	TimePost:GroupSprint	-0.032	0.064	-0.504	45.000	0.617
Bil120	(Intercept)	16.589	2.458	6.748	45.989	0.000
	TimePost	0.825	1.047	0.788	45.000	0.435
	GroupPLYO	-0.515	1.786	-0.288	53.827	0.774
	GroupSprint	-3.491	1.718	-2.032	56.585	0.047
	MatStatusLPUB	3.798	2.461	1.544	42.000	0.130
	MatStatusMPUB	2.051	2.796	0.734	42.000	0.467
	MatStatusPRE	-1.757	2.378	-0.739	42.000	0.464
	TimePost:GroupPLYO	1.009	1.263	0.799	45.000	0.429
	TimePost:GroupSprint	0.072	1.335	0.054	45.000	0.957
Bil132	(Intercept)	20.698	2.803	7.384	45.159	0.000
	TimePost	0.127	1.067	0.119	45.000	0.906
	GroupPLYO	-1.164	2.020	-0.576	51.417	0.567
	GroupSprint	-4.373	1.937	-2.257	53.655	0.028
	MatStatusLPUB	4.447	2.819	1.577	42.000	0.122
	MatStatusMPUB	1.498	3.203	0.468	42.000	0.642
	MatStatusPRE	-2.300	2.724	-0.844	42.000	0.403
	TimePost:GroupPLYO	1.531	1.287	1.190	45.000	0.240
	TimePost:GroupSprint	0.888	1.361	0.653	45.000	0.517
UniR150	(Intercept)	15.196	1.653	9.190	43.698	0.000
	TimePost	0.234	0.465	0.502	45.000	0.618
	GroupPLYO	0.259	1.173	0.221	47.095	0.826
	GroupSprint	-1.823	1.119	-1.629	48.332	0.110
	MatStatusLPUB	4.171	1.677	2.487	42.000	0.017
	MatStatusMPUB	2.092	1.905	1.098	42.000	0.278
	MatStatusPRE	-1.904	1.620	-1.175	42.000	0.247
	TimePost:GroupPLYO	0.140	0.561	0.250	45.000	0.804
	TimePost:GroupSprint	-0.125	0.593	-0.211	45.000	0.834
UniL150	(Intercept)	15.811	1.704	9.279	43.768	0.000
	TimePost	-0.614	0.489	-1.256	45.000	0.216
	GroupPLYO	-0.515	1.210	-0.426	47.304	0.672
	GroupSprint	-2.444	1.154	-2.117	48.591	0.039
	MatStatusLPUB	4.299	1.727	2.489	42.000	0.017
	MatStatusMPUB	2.041	1.963	1.040	42.000	0.304
	MatStatusPRE	-1.835	1.669	-1.099	42.000	0.278

Variable	term	estimate	std.error	statistic	df	p.value
UniR180	TimePost:GroupPLYO	1.392	0.590	2.359	45.000	0.023
	TimePost:GroupSprint	0.808	0.624	1.296	45.000	0.202
	(Intercept)	20.064	2.360	8.501	45.397	0.000
	TimePost	-0.101	0.931	-0.109	45.000	0.914
	GroupPLYO	-0.792	1.705	-0.464	52.111	0.644
	GroupSprint	-2.240	1.636	-1.369	54.502	0.177
	MatStatusLPUB	5.868	2.370	2.476	42.000	0.017
	MatStatusMPUB	2.735	2.693	1.016	42.000	0.316
	MatStatusPRE	-2.241	2.290	-0.979	42.000	0.333
	TimePost:GroupPLYO	1.233	1.122	1.098	45.000	0.278
UniL180	TimePost:GroupSprint	-0.452	1.186	-0.381	45.000	0.705
	(Intercept)	19.331	2.270	8.515	44.303	0.000
	TimePost	-0.654	0.742	-0.882	45.000	0.382
	GroupPLYO	-0.387	1.621	-0.239	48.895	0.812
	GroupSprint	-1.979	1.550	-1.276	50.557	0.208
	MatStatusLPUB	6.114	2.294	2.665	42.000	0.011
	MatStatusMPUB	3.817	2.607	1.464	42.000	0.151
	MatStatusPRE	-2.152	2.217	-0.971	42.000	0.337
	TimePost:GroupPLYO	1.421	0.894	1.589	45.000	0.119
	TimePost:GroupSprint	0.960	0.945	1.016	45.000	0.315
BBJ	(Intercept)	153.762	12.549	12.252	43.991	0.000
	TimePost	-8.260	3.818	-2.163	45.000	0.036
	GroupPLYO	26.104	8.931	2.923	47.967	0.005
	GroupSprint	4.118	8.531	0.483	49.411	0.631
	MatStatusLPUB	13.184	12.706	1.038	42.000	0.305
	MatStatusMPUB	-5.172	14.436	-0.358	42.000	0.722
	MatStatusPRE	-11.812	12.277	-0.962	42.000	0.341
	TimePost:GroupPLYO	5.126	4.605	1.113	45.000	0.272
	TimePost:GroupSprint	10.044	4.867	2.064	45.000	0.045
SBJR	(Intercept)	120.381	11.774	10.224	44.533	0.000
	TimePost	-1.950	4.029	-0.484	45.000	0.631
	GroupPLYO	22.759	8.429	2.700	49.577	0.009
	GroupSprint	11.674	8.067	1.447	51.397	0.154
	MatStatusLPUB	22.763	11.883	1.916	42.000	0.062
	MatStatusMPUB	3.778	13.502	0.280	42.000	0.781
	MatStatusPRE	-0.705	11.483	-0.061	42.000	0.951
	TimePost:GroupPLYO	4.825	4.859	0.993	45.000	0.326
	TimePost:GroupSprint	5.509	5.136	1.073	45.000	0.289
SBJL	(Intercept)	121.539	11.637	10.444	43.403	0.000
	TimePost	-0.760	2.983	-0.255	45.000	0.800
	GroupPLYO	28.508	8.228	3.465	46.212	0.001
	GroupSprint	10.547	7.841	1.345	47.237	0.185
	MatStatusLPUB	20.193	11.822	1.708	42.000	0.095
	MatStatusMPUB	7.181	13.432	0.535	42.000	0.596
	MatStatusPRE	-1.497	11.423	-0.131	42.000	0.896
	TimePost:GroupPLYO	3.476	3.597	0.966	45.000	0.339
	TimePost:GroupSprint	7.079	3.802	1.862	45.000	0.069
TBJ	(Intercept)	431.761	36.430	11.852	43.391	0.000
	TimePost	11.050	9.297	1.189	45.000	0.241
	GroupPLYO	107.339	25.755	4.168	46.175	0.000
	GroupSprint	52.383	24.543	2.134	47.191	0.038
	MatStatusLPUB	41.565	37.012	1.123	42.000	0.268
	MatStatusMPUB	5.643	42.053	0.134	42.000	0.894
	MatStatusPRE	-26.091	35.764	-0.730	42.000	0.470

Variable	term	estimate	std.error	statistic	df	p.value
	TimePost:GroupPLYO	-14.475	11.212	-1.291	45.000	0.203
	TimePost:GroupSprint	-21.347	11.851	-1.801	45.000	0.078
TBJR	(Intercept)	342.360	37.993	9.011	43.613	0.000
	TimePost	19.050	10.429	1.827	45.000	0.074
	GroupPLYO	70.332	26.926	2.612	46.841	0.012
	GroupSprint	24.505	25.682	0.954	48.017	0.345
	MatStatusLPUB	90.376	38.550	2.344	42.000	0.024
	MatStatusMPUB	19.878	43.800	0.454	42.000	0.652
	MatStatusPRE	3.807	37.249	0.102	42.000	0.919
	TimePost:GroupPLYO	-15.333	12.578	-1.219	45.000	0.229
	TimePost:GroupSprint	1.609	13.295	0.121	45.000	0.904
TBJL	(Intercept)	347.165	38.412	9.038	43.385	0.000
	TimePost	19.190	9.784	1.961	45.000	0.056
	GroupPLYO	74.859	27.155	2.757	46.159	0.008
	GroupSprint	22.191	25.877	0.858	47.171	0.395
	MatStatusLPUB	78.214	39.028	2.004	42.000	0.052
	MatStatusMPUB	28.696	44.343	0.647	42.000	0.521
	MatStatusPRE	-3.626	37.711	-0.096	42.000	0.924
	TimePost:GroupPLYO	-9.092	11.800	-0.771	45.000	0.445
	TimePost:GroupSprint	-4.237	12.472	-0.340	45.000	0.736
Bil120_rel	(Intercept)	28.359	2.936	9.660	49.729	0.000
	TimePost	1.788	1.708	1.047	45.000	0.301
	GroupPLYO	-2.107	2.209	-0.954	63.974	0.344
	GroupSprint	-4.251	2.148	-1.979	68.432	0.052
	MatStatusLPUB	1.054	2.877	0.366	42.000	0.716
	MatStatusMPUB	1.988	3.269	0.608	42.000	0.546
	MatStatusPRE	0.161	2.780	0.058	42.000	0.954
	TimePost:GroupPLYO	0.294	2.060	0.143	45.000	0.887
	TimePost:GroupSprint	-0.074	2.177	-0.034	45.000	0.973
Bil132_rel	(Intercept)	35.597	3.395	10.484	47.535	0.000
	TimePost	0.250	1.690	0.148	45.000	0.883
	GroupPLYO	-3.596	2.505	-1.436	58.180	0.156
	GroupSprint	-5.571	2.421	-2.301	61.783	0.025
	MatStatusLPUB	1.080	3.369	0.321	42.000	0.750
	MatStatusMPUB	0.727	3.827	0.190	42.000	0.850
	MatStatusPRE	-0.200	3.255	-0.061	42.000	0.951
	TimePost:GroupPLYO	1.485	2.038	0.729	45.000	0.470
	TimePost:GroupSprint	1.445	2.154	0.671	45.000	0.506
UniR150_rel	(Intercept)	26.702	1.694	15.761	45.443	0.000
	TimePost	0.457	0.672	0.680	45.000	0.500
	GroupPLYO	-1.139	1.224	-0.930	52.245	0.356
	GroupSprint	-1.841	1.175	-1.566	54.665	0.123
	MatStatusLPUB	1.601	1.701	0.941	42.000	0.352
	MatStatusMPUB	1.356	1.933	0.701	42.000	0.487
	MatStatusPRE	-0.889	1.644	-0.541	42.000	0.592
	TimePost:GroupPLYO	-0.495	0.811	-0.610	45.000	0.545
	TimePost:GroupSprint	-0.418	0.857	-0.488	45.000	0.628
UniL150_rel	(Intercept)	27.682	1.723	16.070	47.172	0.000
	TimePost	-1.147	0.830	-1.381	45.000	0.174
	GroupPLYO	-2.644	1.266	-2.088	57.176	0.041
	GroupSprint	-3.073	1.222	-2.513	60.597	0.015
	MatStatusLPUB	2.031	1.713	1.186	42.000	0.242
	MatStatusMPUB	1.650	1.946	0.848	42.000	0.401
	MatStatusPRE	-0.429	1.655	-0.259	42.000	0.797

Variable	term	estimate	std.error	statistic	df	p.value
	TimePost:GroupPLYO	1.662	1.001	1.660	45.000	0.104
	TimePost:GroupSprint	1.281	1.058	1.210	45.000	0.232
UniR180_rel	(Intercept)	35.401	2.750	12.873	48.465	0.000
	TimePost	0.197	1.472	0.134	44.999	0.894
	GroupPLYO	-3.293	2.046	-1.610	60.694	0.113
	GroupSprint	-2.170	1.983	-1.095	64.711	0.278
	MatStatusLPUB	2.671	2.714	0.984	42.002	0.331
	MatStatusMPUB	2.155	3.084	0.699	42.002	0.489
	MatStatusPRE	-0.822	2.623	-0.313	42.002	0.756
	TimePost:GroupPLYO	0.448	1.775	0.252	44.999	0.802
	TimePost:GroupSprint	-1.503	1.876	-0.801	44.999	0.427
UniL180_rel	(Intercept)	34.334	2.708	12.679	46.983	0.000
	TimePost	-1.259	1.282	-0.981	45.000	0.332
	GroupPLYO	-2.895	1.987	-1.457	56.650	0.151
	GroupSprint	-2.062	1.917	-1.076	59.972	0.286
	MatStatusLPUB	3.237	2.695	1.201	42.000	0.236
	MatStatusMPUB	3.921	3.062	1.281	42.000	0.207
	MatStatusPRE	-0.762	2.604	-0.293	42.000	0.771
	TimePost:GroupPLYO	1.527	1.547	0.987	45.000	0.329
	TimePost:GroupSprint	1.451	1.635	0.887	45.000	0.380
BBJ_Rel	(Intercept)	2.055	0.170	12.072	43.884	0.000
	TimePost	-0.120	0.050	-2.384	45.000	0.021
	GroupPLYO	0.209	0.121	1.728	47.648	0.090
	GroupSprint	0.008	0.116	0.066	49.017	0.948
	MatStatusLPUB	0.101	0.172	0.585	42.000	0.562
	MatStatusMPUB	-0.091	0.196	-0.463	42.000	0.646
	MatStatusPRE	0.002	0.167	0.012	42.000	0.990
	TimePost:GroupPLYO	0.074	0.061	1.222	45.000	0.228
	TimePost:GroupSprint	0.120	0.064	1.870	45.000	0.068
SBJR_Rel	(Intercept)	1.610	0.152	10.560	44.665	0.000
	TimePost	-0.036	0.053	-0.678	45.000	0.501
	GroupPLYO	0.195	0.109	1.784	49.967	0.080
	GroupSprint	0.125	0.105	1.197	51.877	0.237
	MatStatusLPUB	0.224	0.154	1.455	42.000	0.153
	MatStatusMPUB	0.021	0.175	0.118	42.000	0.907
	MatStatusPRE	0.123	0.149	0.828	42.000	0.413
	TimePost:GroupPLYO	0.068	0.064	1.049	45.000	0.300
	TimePost:GroupSprint	0.057	0.068	0.834	45.000	0.408
SBJL_Rel	(Intercept)	1.619	0.149	10.885	43.466	0.000
	TimePost	-0.016	0.039	-0.412	45.000	0.682
	GroupPLYO	0.268	0.105	2.543	46.400	0.014
	GroupSprint	0.113	0.100	1.122	47.471	0.267
	MatStatusLPUB	0.196	0.151	1.295	42.000	0.202
	MatStatusMPUB	0.070	0.172	0.409	42.000	0.685
	MatStatusPRE	0.119	0.146	0.818	42.000	0.418
	TimePost:GroupPLYO	0.043	0.047	0.922	45.000	0.361
	TimePost:GroupSprint	0.075	0.050	1.519	45.000	0.136
TBJ_Rel	(Intercept)	5.748	0.506	11.368	43.293	0.000
	TimePost	0.129	0.124	1.035	45.000	0.306
	GroupPLYO	1.025	0.357	2.870	45.883	0.006
	GroupSprint	0.580	0.340	1.706	46.829	0.095
	MatStatusLPUB	0.337	0.514	0.655	42.000	0.516
	MatStatusMPUB	0.005	0.584	0.008	42.000	0.993
	MatStatusPRE	0.151	0.497	0.304	42.000	0.763

Variable	term	estimate	std.error	statistic	df	p.value
TBJR_Rel	TimePost:GroupPLYO	-0.194	0.150	-1.294	45.000	0.202
	TimePost:GroupSprint	-0.334	0.159	-2.104	45.000	0.041
	(Intercept)	4.556	0.507	8.984	43.502	0.000
	TimePost	0.234	0.134	1.744	45.000	0.088
	GroupPLYO	0.635	0.359	1.768	46.509	0.084
	GroupSprint	0.238	0.342	0.697	47.605	0.489
	MatStatusLPUB	0.976	0.515	1.895	42.000	0.065
	MatStatusMPUB	0.184	0.585	0.314	42.000	0.755
	MatStatusPRE	0.459	0.497	0.923	42.000	0.361
	TimePost:GroupPLYO	-0.212	0.162	-1.306	45.000	0.198
TBJL_Rel	TimePost:GroupSprint	-0.011	0.171	-0.066	45.000	0.948
	(Intercept)	4.609	0.491	9.390	43.473	0.000
	TimePost	0.245	0.129	1.901	45.000	0.064
	GroupPLYO	0.676	0.347	1.947	46.421	0.058
	GroupSprint	0.206	0.331	0.622	47.497	0.537
	MatStatusLPUB	0.838	0.498	1.681	42.000	0.100
	MatStatusMPUB	0.317	0.566	0.560	42.000	0.579
	MatStatusPRE	0.368	0.482	0.763	42.000	0.450
	TimePost:GroupPLYO	-0.138	0.155	-0.889	45.000	0.379
	TimePost:GroupSprint	-0.106	0.164	-0.643	45.000	0.524

In examining the results of the athletic intervention through linear mixed models, several interaction effects between time and group are noteworthy:

For LL, the interaction effect for the Sprint group from pre- to post-intervention was marginally below the threshold of significance ( $B = 0.667$ ,  $SE = 0.375$ ,  $t(45) = 1.778$ ,  $p = .082$ ), suggesting a potential increase in LL that warrants further investigation.

The interaction term for PercPAH for the Sprint group was significant ( $B = 0.781$ ,  $SE = 0.342$ ,  $t(45) = 2.283$ ,  $p = .027$ ), indicating a notable increase in PercPAH post-intervention compared to the control.

For Offset, the Sprint group showed a significant interaction effect ( $B = 0.180$ ,  $SE = 0.065$ ,  $t(45) = 2.751$ ,  $p = .009$ ), suggesting a significant change in offset post-intervention.

In the UniL150, the PLYO group demonstrated a significant interaction effect ( $B = 1.392$ ,  $SE = 0.590$ ,  $t(45) = 2.359$ ,  $p = .023$ ), which could indicate an improvement in UNiL150 after the intervention.

The BBJ for the Sprint group showed a significant interaction term ( $B = 10.044$ ,  $SE = 4.867$ ,  $t(45) = 2.064$ ,  $p = .045$ ), suggesting an enhancement in BBJ performance post-intervention.

For the SBJL, the Sprint group showed a trend that was near significance ( $B = 7.079$ ,  $SE = 3.802$ ,  $t(45) = 1.862$ ,  $p = .069$ ), pointing to a possible improvement that should be examined further.

In the TBJ, the Sprint group showed a trend ( $B = -21.347$ ,  $SE = 11.851$ ,  $t(45) = -1.801$ ,  $p = .078$ ), where a negative estimate indicates a decrease.

The relative BBJ for the Sprint group was close to the significance threshold ( $B = 0.120$ ,  $SE = 0.064$ ,  $t(45) = 1.870$ ,  $p = .068$ ), suggesting that the relative improvement in BBJ performance for the Sprint group post-intervention is of potential interest.

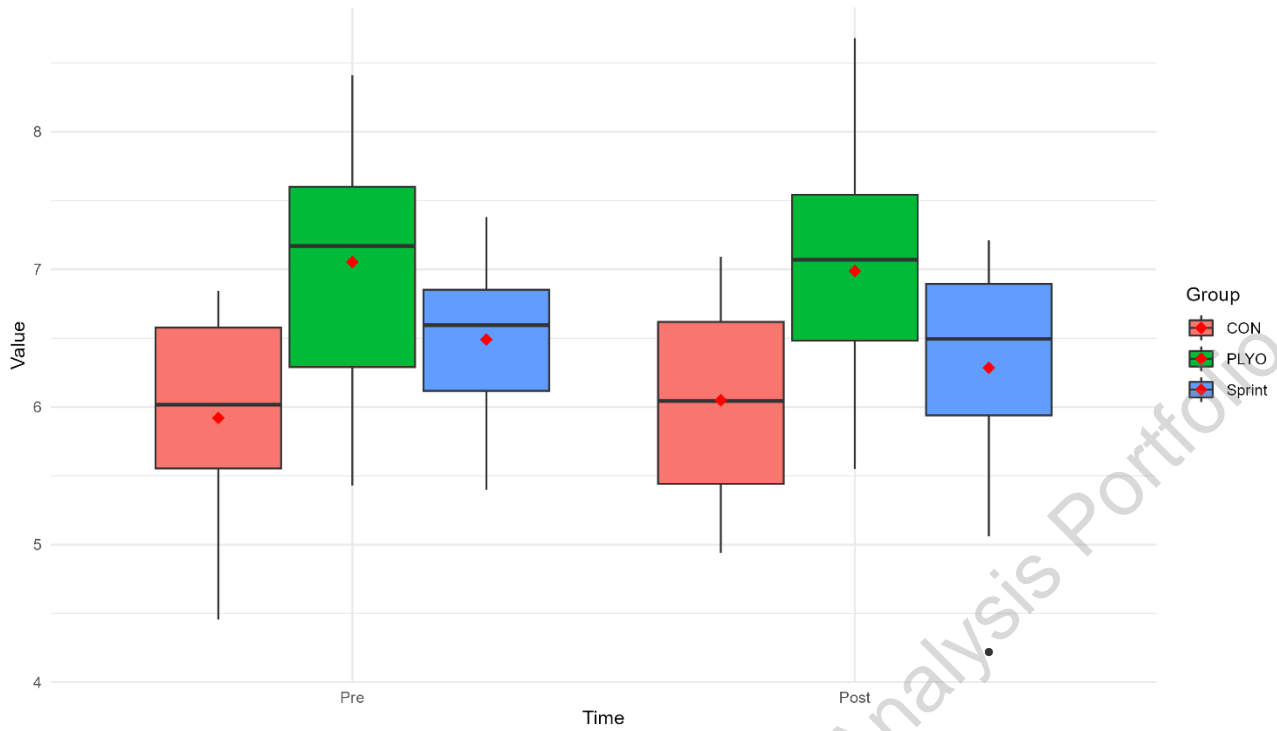
Finally, the TBJ\_rel for the Sprint group was significant ( $B = -0.334$ ,  $SE = 0.159$ ,  $t(45) = -2.104$ ,  $p = .041$ ), indicating a significant change in relative performance.

These results, particularly those near or below the p-value threshold of 0.1, indicate potential areas where the intervention had an impact, highlighting the importance of considering both statistical and practical significance in the assessment of athletic interventions.

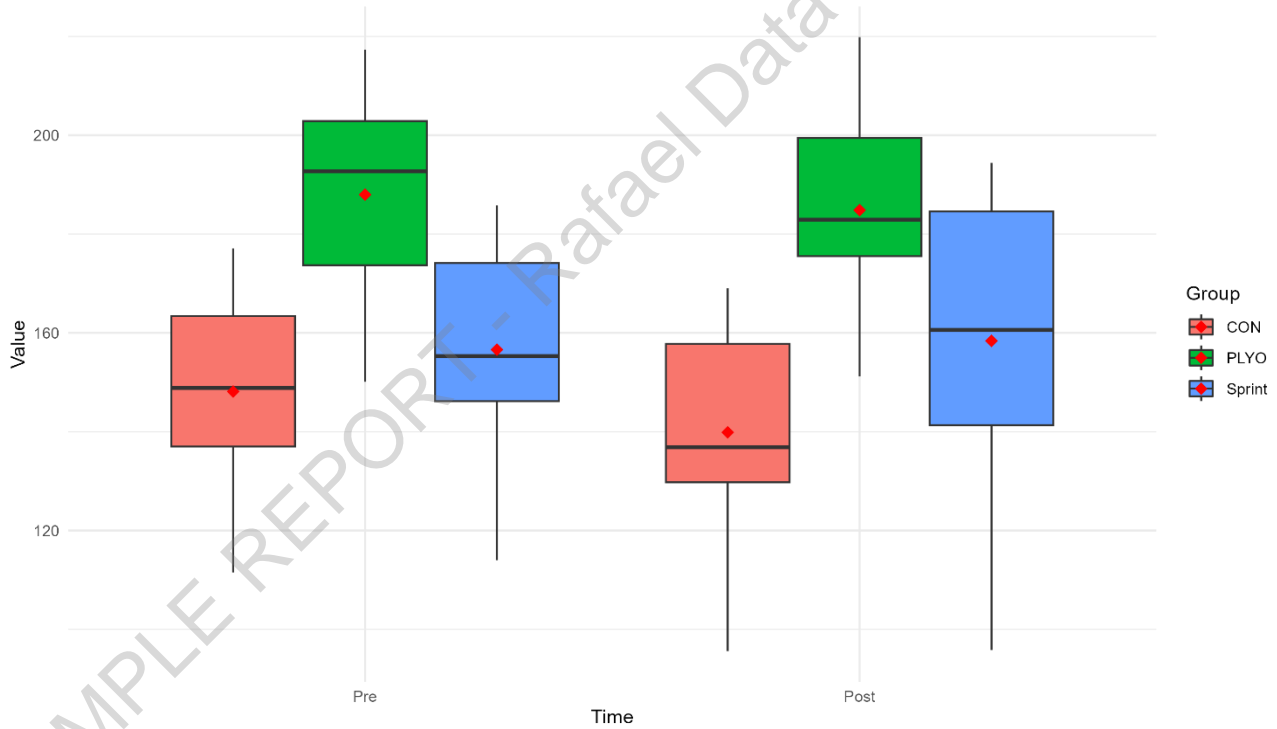
The boxplots below illustrate the changes in the measurement scores for all significant measures. This enables the visualization of the nature of the differences. Boxplots for all variables were generated and can be found in the delivered zip file.

Q-Q plots and scatterplots of residuals were generated for each LMM to evaluate the assumptions regarding residuals (homoscedasticity, normality, linearity). No substantial violation of residual assumptions were observed.

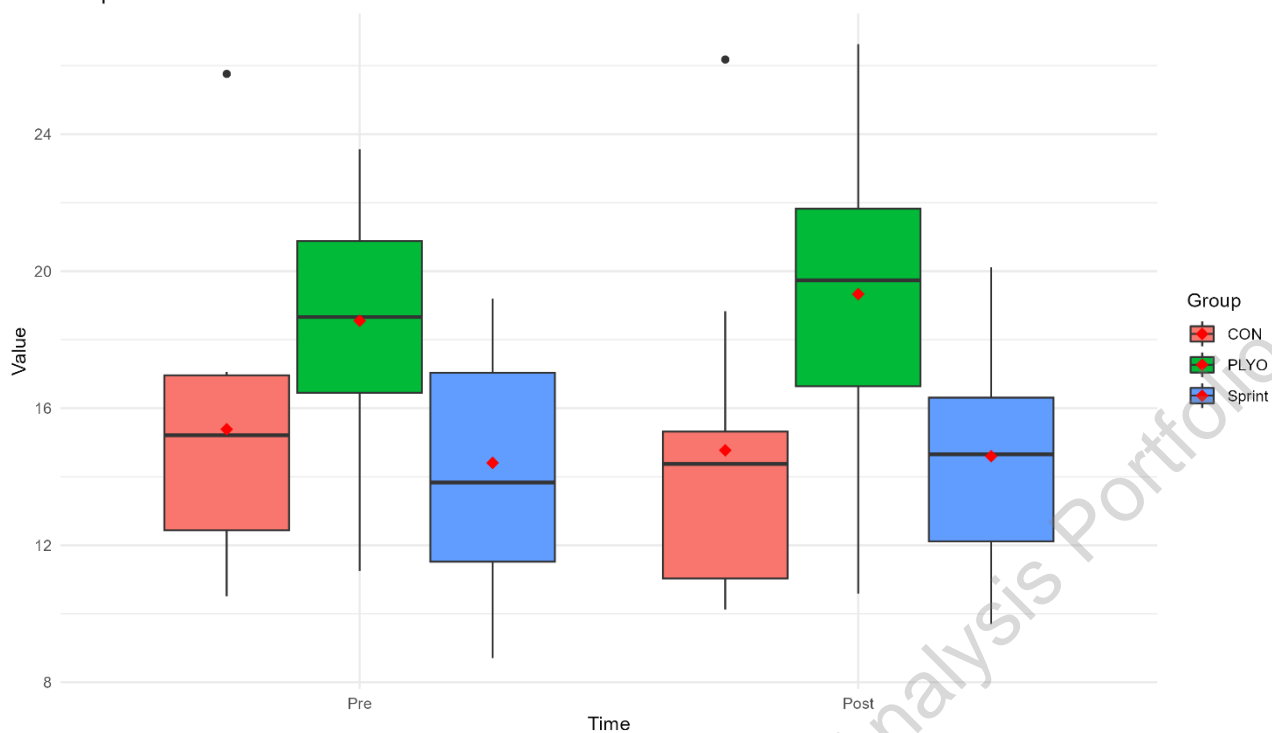
Boxplot of TBJ\_Rel Pre vs Post



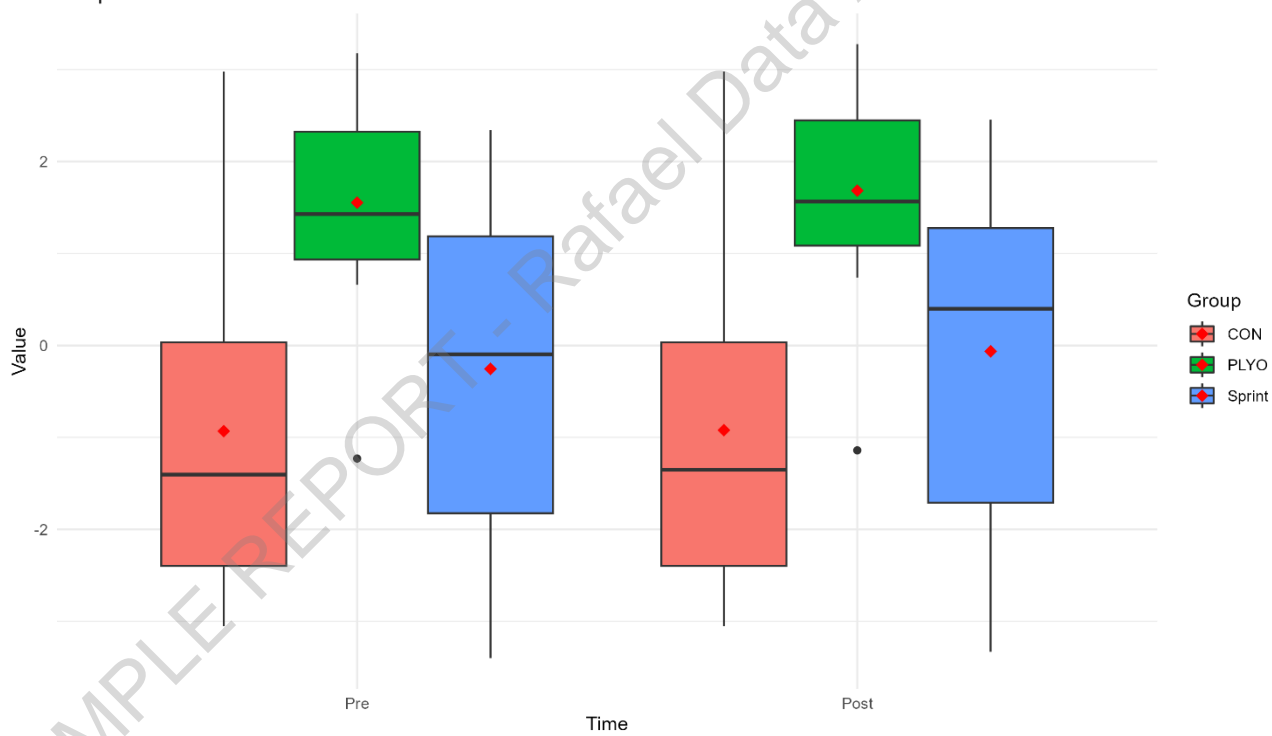
Boxplot of BBJ Pre vs Post



Boxplot of UniL150 Pre vs Post

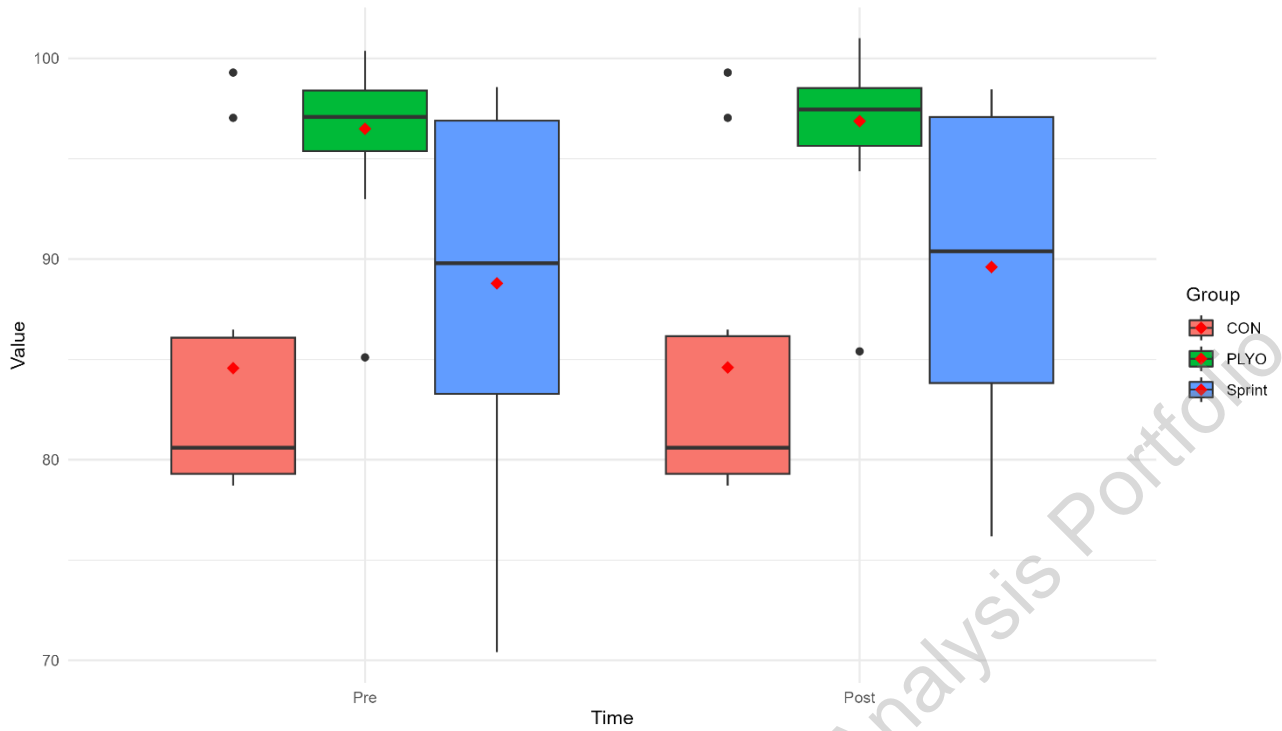


Boxplot of Offset Pre vs Post





Boxplot of PercPAH Pre vs Post



Boxplot of TBJ Pre vs Post

