Figure S1: Flow chart of the eligibility and the willingness to join the study.

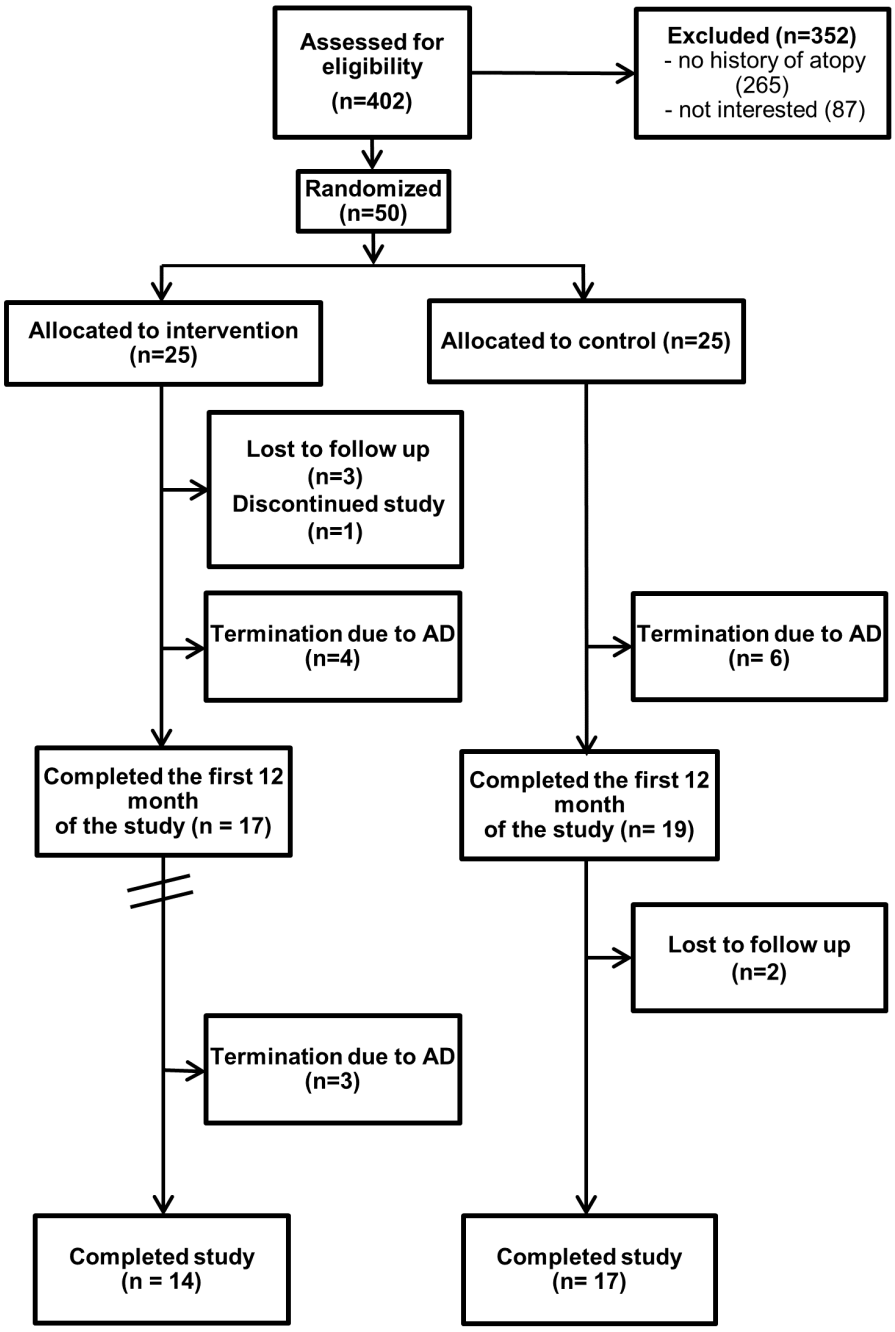

Figure S2: TEWL values measured at the cheek (A) and at the volar forearm (B) plotted over time for the control group (red) and the intervention group (blue). On x-axis the different timepoints are shown in months. Solid lines are visualizing the linear regression for the two groups.

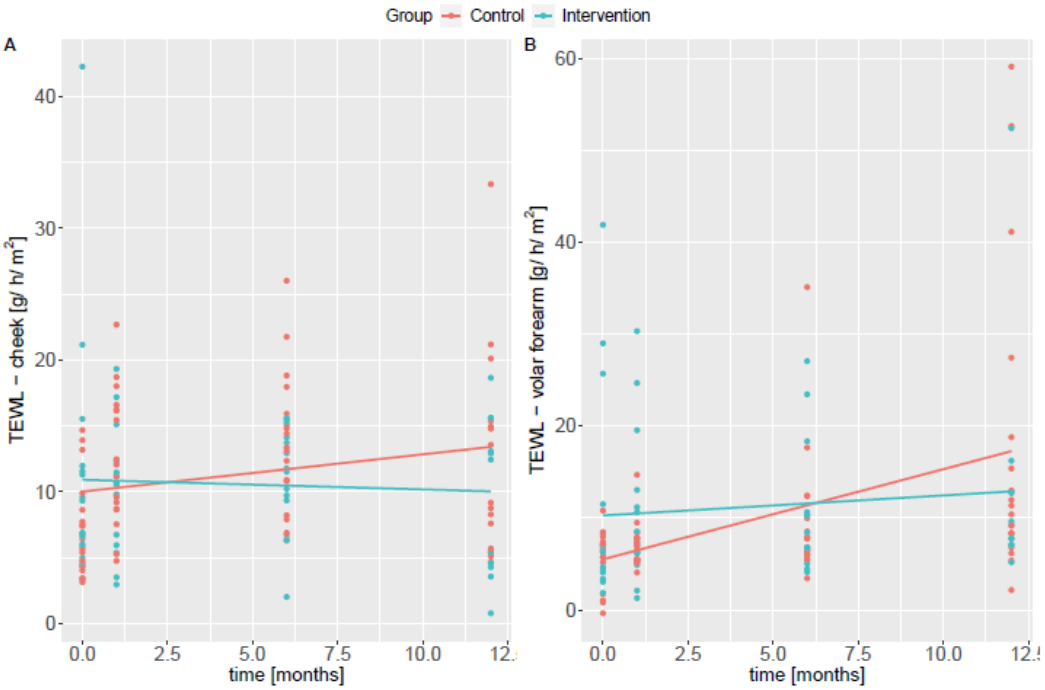

Figure S3: SC hydration values measured at the cheek (A) and at the volar forearm (B) plotted, without the children who developed AD, over time for the control group (red) and the intervention group (blue). On x-axis the different timepoints are shown in months. Solid lines are visualizing the linear regression for the two groups.

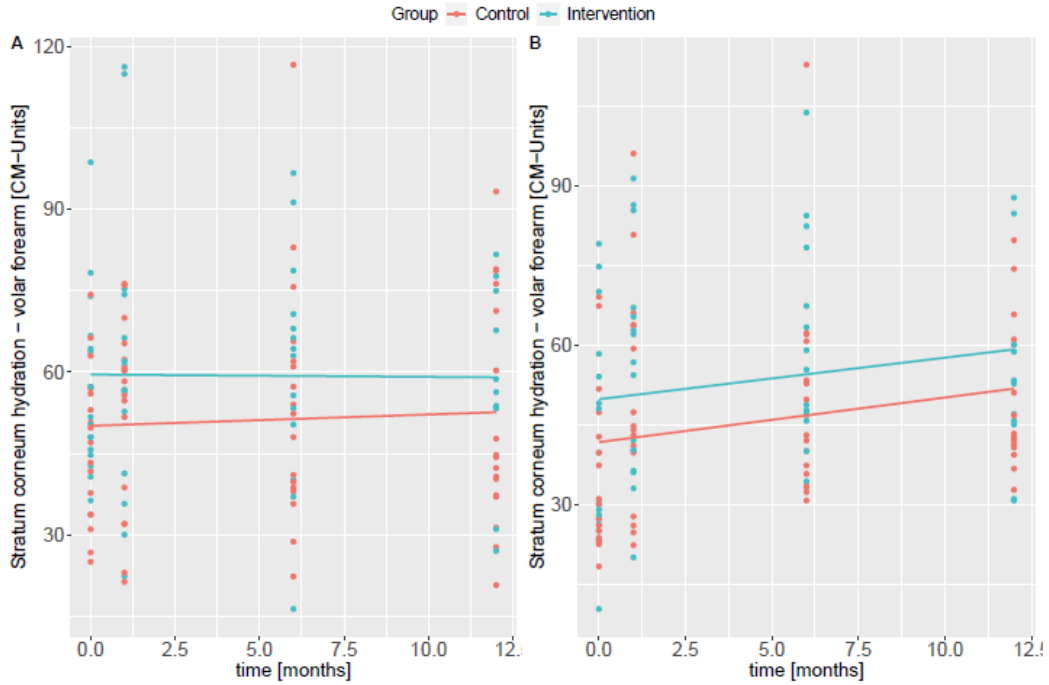

Figure S4: pH values measured at the cheek (A) and at the volar forearm (B) plotted, without the children who developed AD, over time for the control group (red) and the intervention group (blue). On x-axis the different timepoints are shown in months. Solid lines are visualizing the linear regression for the two groups.

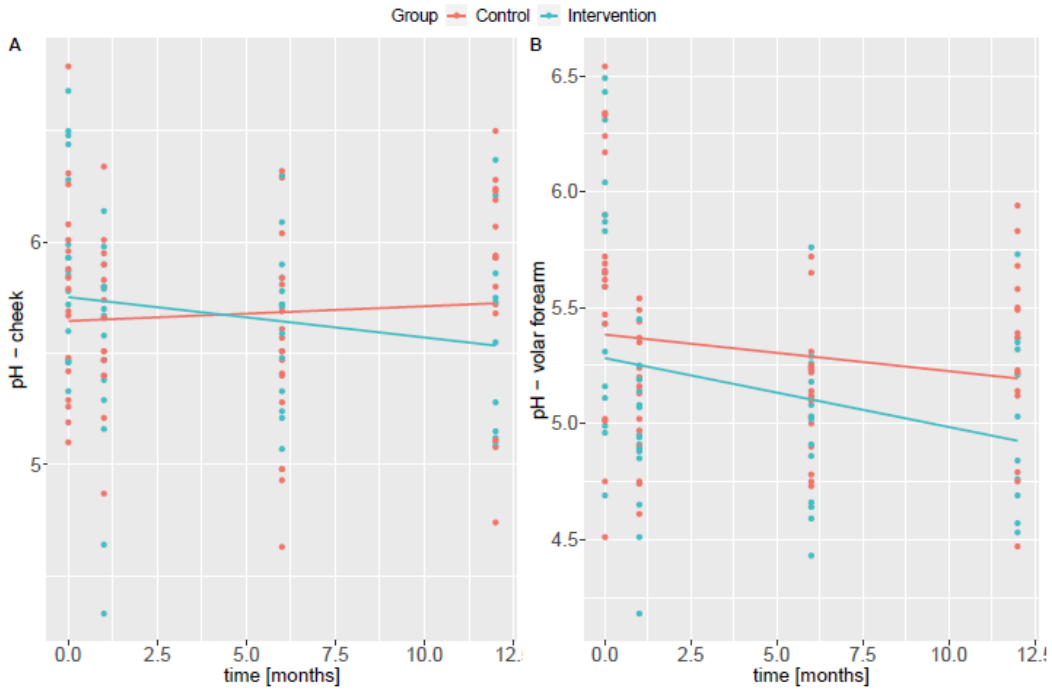

Figure S5: Comparison of the EASI and oSCORAD at time of onset of AD in the control and intervention group after reclassification**.**

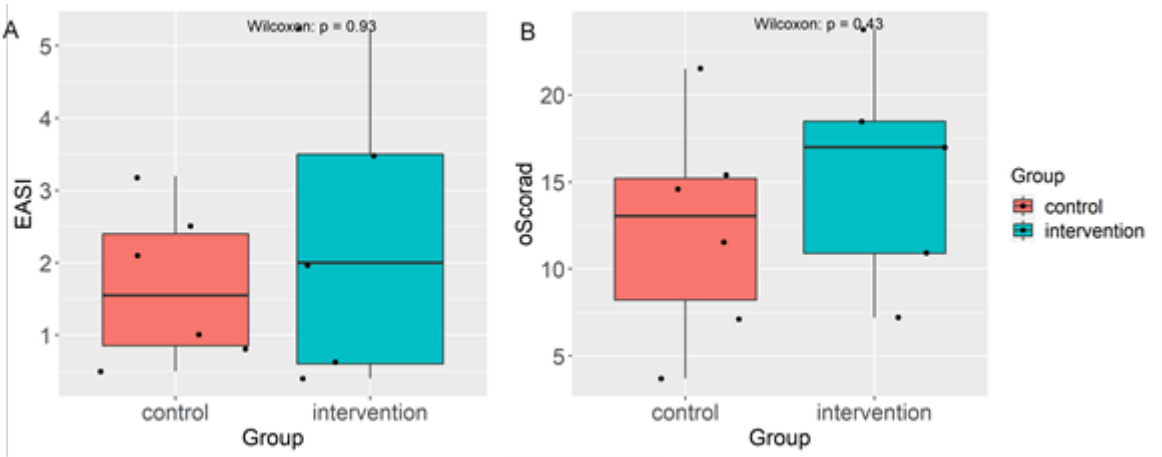

Figure S6: Box plots for TEWL measurements at the cheek (A) and the volar forearm (B) in the reclassified groups. The Median is plotted for each visit of the control group (red) and the intervention group (blue). On x-axis the different timepoints are shown in months.

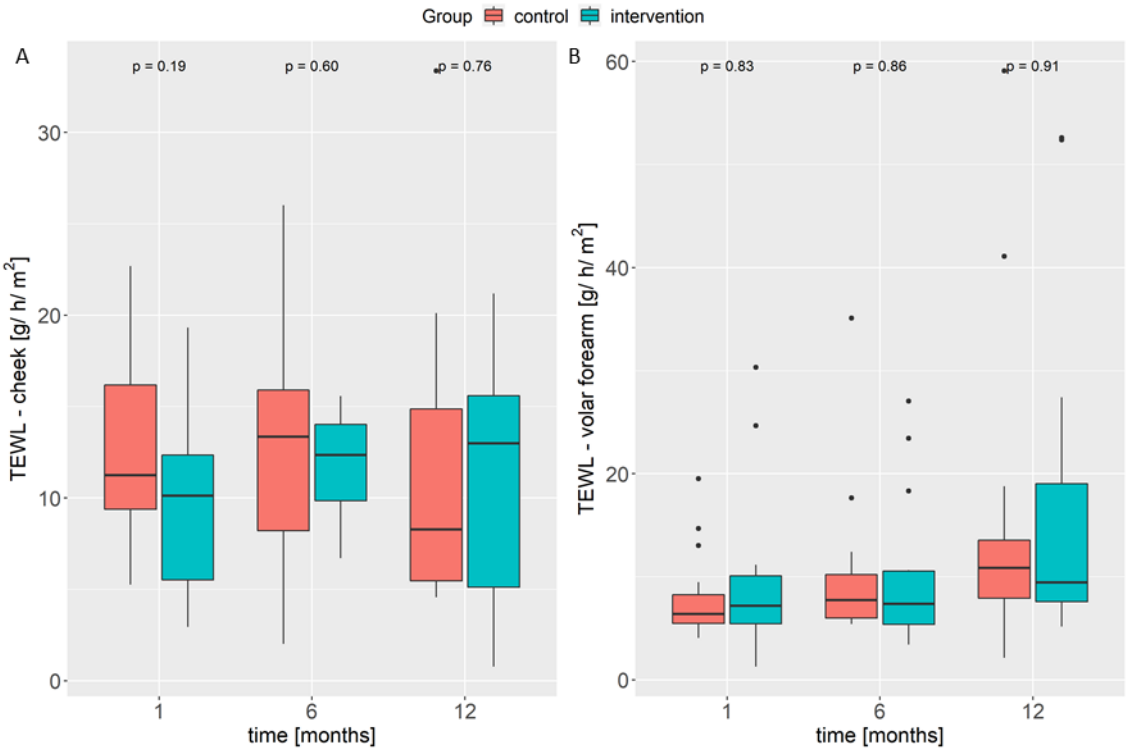

Figure S7: Box plots for SC hydration measurements at the cheek (A) and the volar forearm (B) in the reclassified groups. The Median is plotted for each visit of the control group (red) and the intervention group (blue). On x-axis the different timepoints are shown in months.

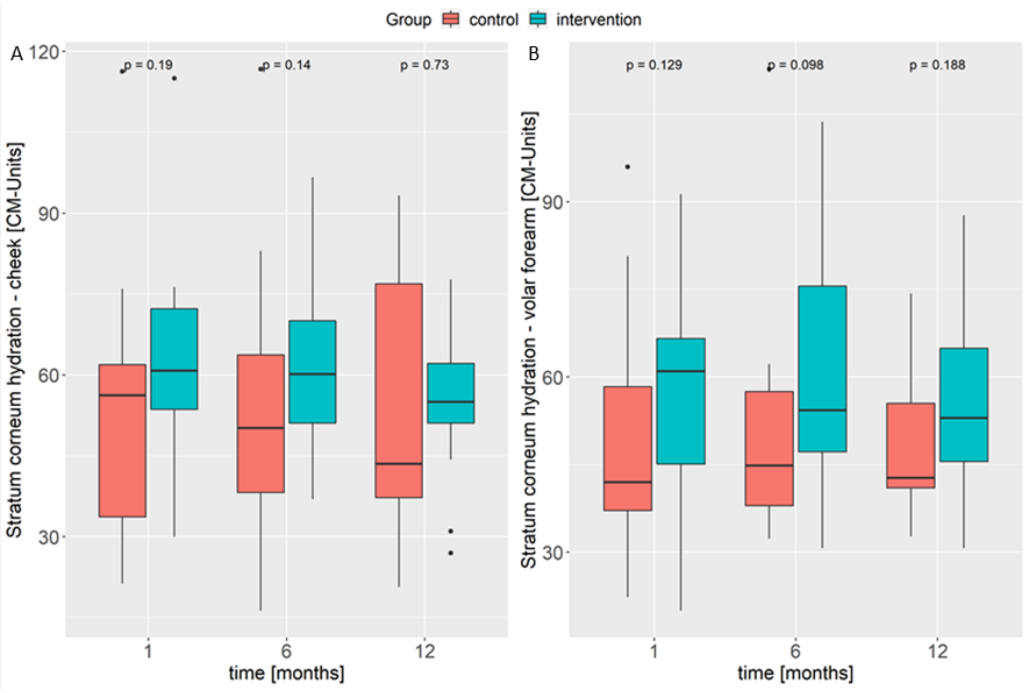

Figure S8: Microbiome differences between intervention and control group by sensitivity analysis. (A) Alpha diversity (Shannon index) summarised over all timepoints. (B) Beta diversity (PcoA of Bray-Curtis dissimilarity) summarised over all timepoints. (C) Alpha diversity (Shannon index) for each timepoint, p-value indicates wilcoxon rank sum test. (D) Volcano plot of linear model based differential abundant ASVs. Negative Log10 of the Benjamini Hochberg corrected p-value is plotted over the Log2FoldChange per ASV, grey dots indicate non-significantly differential ASVs with a LFC of 1 or lower, green dots indicate non-significantly differential ASVs with a LFC great 1 and blue dots indicate ASVs with a significantly differential abundance between the groups and a LFC greater 1. Significantly differential ASVs with a LFC greater 1 from genera Streptococcus and Staphylococcus are highlighted in orange and pink, respectively.