Supplementary text

Statistical analysis

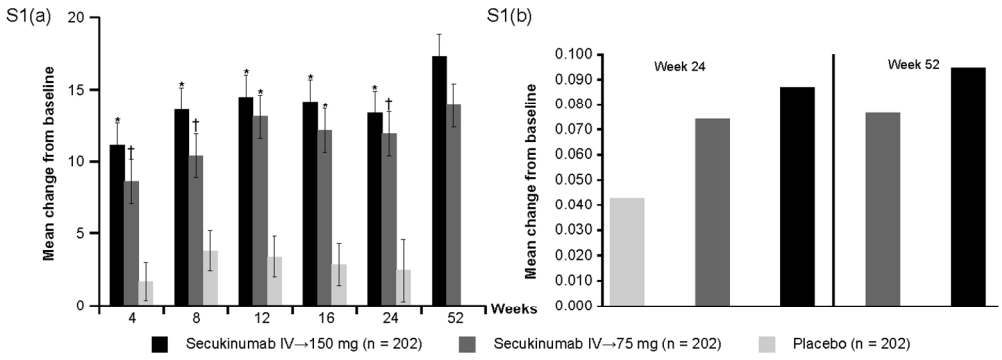
Between-treatment differences in patient reported outcomes (PROs) (except Work Productivity and Activity Impairment-General Health Questionnaire [WPAI-GH]) at week 24 were evaluated using a mixed-effect repeated measures model, with treatment regimen, visit and prior tumour necrosis factor inhibitor (TNFi) receipt as factors, weight and respective baseline score as continuous covariates, and treatment by analysis visit and baseline by analysis visit as interaction terms. An unstructured covariance structure was assumed for this model. Significance of the treatment effects for both secukinumab regimens was determined from pairwise comparisons performed between secukinumab and placebo at the appropriate analysis visits. From week 28 to week 52, observed data were summarised, unless otherwise indicated. For WPAI-GH, results were summarised by visit and treatment group using observed data.

For analysis of the proportion of subjects reporting improvements meeting or exceeding minimum clinically important differences (≥MCID) for health assessment questionnaire disability index scores (HAQ-DI responders) and Short Form-36 Health Survey physical component summary scores (SF-36 PCS responders), treatment groups were compared using a logistic regression model, with treatment and randomisation strata as factors and weight and baseline SF-36 PCS score as covariates. Odds ratios with corresponding 95% confidence intervals and p-values were estimated for comparisons of secukinumab doses versus placebo. Non-responder imputation was used. Subjects who withdrew from the trial for any reason were considered non-responders from time of discontinuation for the remainder of the trial. Data collected after the subject was rescued at week 16 was treated as missing for placebo subjects who switched to secukinumab, and the actual values were used for secukinumab subjects.

SF-6D utility scores

The SF-6D (Model 1) utility scores (see supplementary table 1) were quantified on the basis of an algorithm using mean values of all eight domains of Short Form-36 Health Survey (SF-36 [1, 2]) and the minimum important difference (MID) was determined as 0.041 (the MID on the basis of the original calculation based on individual responses to 11 questions of SF-36 is 0.046 [3]).

SF-6D utility scores at baseline were in the range of 0.613–0.624 across all treatment groups (supplementary figure 1b), lower than that corresponding to the age and gender-matched normative population of 0.774.[4] At week 24, improvements exceeding MID = 0.041were observed in all treatment groups. However, improvements with secukinumab IV→150 mg of 0.087 were almost double that observed with placebo (0.043; supplementary figure 1b); the change from baseline was 0.074 in the secukinumab IV→75 mg group (supplementary figure 1b).



	SecukinumabIV→150 mg			Secukinumab IV→75 mg			Placebo	
	BL	Week 24	Week 52	BL	Week 24	Week 52	BL	Week 24
EQ - 5D	52.6	13.36	17.3	52.8	11.91	13.9	52.6	2.45
SF - 6D	0.613	0.700	0.708	0.614	0.688	0.691	0.624	0.666

*p<0.0001; †p<0.001 versus placebo. For EQ-5D, LSM (±SE) change data shown up to week 24 are from mixed-effect repeated measures model analysis; observed data are shown from week 28 to week 52. The mean changes are shown for SF-6D (Model 1) utility scores. The combined baseline SF-6D scores are 0.617 and the age/gender matched norms scores are 0.774. There appears to be a clear dose response at both week 24 and week 52. EQ-5D and SF-6D (Model 1) are exploratory assessments BL, baseline; EQ-5D, EuroQoL 5-Dimension Health Status Questionnaire; LS mean, least squares mean; MCID, minimum clinically important difference; MID, minimum important difference; SE, standard error.

Supplementary Figure 1

Supplementary Table 1. Overview of the patient-reported outcome instruments

Instrument	Description	Assessment	MCID
PtGA[5]	Assessment of disease activity using a VAS	0–100 mm VAS ranging from no disease activity to maximal disease activity	Improvement: 10.0 points
VAS pain[5]	Assessment of disease-related pain using a VAS	0–100 mm VAS ranging from no pain to unbearable pain	Improvement: 10.0 points
HAQ-DI[6, 7]	Assesses a subject's level of functional ability. It includes questions on fine movements of the upper extremity, locomotor activities of the lower extremity and activities that involve both upper and lower extremities. There are 20 questions in eight categories of functioning including dressing, rising, eating, walking, hygiene, reach, grip and usual activities	0–3 on a 4-point scale (no difficulty = 0, some difficulty = 1, much difficulty = 2 and unable to do = 3). The scale is not truly continuous but has 25 possible values (i.e., 0, 0.125, 0.250, 0.375, … 3).	Improvement: 0.35[8] points
SF-36 version 2 (acute form)[9, 10]	Assesses health-related QoL. It consists of eight subscales that can be scored individually: physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional and mental health	0–100 points (worst to best). A high score indicates better health.	Improvement: 5.0 points[11] Deterioration: –2.5 points
SF-36 PCS and MCS[9, 10]	Summary of SF-36 domain scores separately as physical components and mental components	0–50 points for each component (normative value = 50, SD 10)	Improvement: 2.5 points Deterioration: –0.8 points
SF-6D (utility-based measure)[1, 2]	SF-6D (Model 1) utility scores on the basis of the mean values across all eight domains of SF-36	0.296–1.0 (0 = death, 1.0 = perfect health) 0.296 represents the maximum impaired level on all six dimensions, and 1 represents "full health," i.e., the least impaired level on all six dimensions.	MID ≥0.041[12]
EQ-5D v3L[13, 14]	Assesses health status. The first section of the questionnaire has five questions (regarding mobility, self-care, usual activities, pain/discomfort and anxiety/depression) and the second section has a health state assessment using a VAS	Each question has three categories (no problems, moderate problems and severe problems). The health state assessment is from 0 (worst possible health state) to 100 (best possible health state). Overall scores range from 0 to 1, with lower scores representing a higher level of dysfunction	Improvement: 10.0 points
PsAQoL[15]	Assesses the impact of PsA and its treatment on QoL. Each item of the 20-	Total score is determined by the number of questions that	

	item questionnaire is in the form of a simple statement to which subjects indicate whether or not the statement is true for them at that moment.	receive a "yes" response. A higher score reflects a worse QoL	
FACIT-F v4[16]	Assesses self-reported fatigue and its impact upon daily activities and function. It is a 13-item questionnaire evaluated on a 5-point scale	0–4 points (0 = not at all and 4 = very much). Total score ranges between 0–52. High scores represent better QoL and less fatigue	Improvement: 4 points[17]
WPAI-GH[18]	Measures impairments in both paid work and unpaid work, in terms of absenteeism and presenteeism, as well as the impairments in unpaid activity, because of health problems. The questionnaire has six questions: currently employed, hours missed due to health problems, hours missed other reasons, hours actually worked, degree of health-affected productivity while working (VAS) and degree of health-affected productivity in regular unpaid activities (VAS)	Four main outcomes are generated and expressed as percentages 1. Percentage work time missed due to health for those who were currently employed 2. Percentage impairment while working due to health for those who were currently employed and actually worked in the past seven days 3. Percentage overall work impairment due to health for those who were currently employed 4. Percentage activity impairment due to health for all respondents Higher scores indicate greater impairment and less productivity	
DLQI*[19]	Assesses health-related QoL and measures functional disability in the subset of subjects with psoriasis. It is a 10-item general dermatology disability index including domains of daily activities, leisure, personal relationships, symptoms and feelings, treatment and work/school.	Each item has four response categories: 0 (not at all), 1 (a little), 2 (a lot) and 3 (very much). 'Not relevant' is also a valid response and is scored as 0. Scores range from 0 to 30, and higher scores indicate greater health-related QoL impairment	

*Assessed only if ≥3% of body surface area was affected by psoriatic skin involvement at baseline.

DLQI, Dermatology Life Quality Index; EQ-5D, EuroQoL 5-Dimension Health Status Questionnaire; FACIT-Fatigue, Functional Assessment of Chronic Illness Therapy-Fatigue; HAQ-DI, health assessment questionnaire disability index; MCID, minimum clinically important difference; MCS, mental component summary; PtGA, patient's global assessment of disease activity; MID, minimum important difference; PCS, physical component summary; PtGA, patient's global assessment; PsA, psoriatic arthritis; QoL, quality of life; SD, standard deviation; SF-36, Short Form-36 Health Survey; VAS, visual analogue scale; WPAI-GH, Work Productivity and Activity Impairment-General Health Questionnaire. The SF-6D (Model 1) utility scores (Supplementary Table 1) were quantified on the basis of an algorithm using mean values of all eight domains of SF-36,[1, 2] and the minimum

important difference (MID) was determined as 0.041 (the MID on the basis of the original calculation based on individual responses to 11 questions of SF-36 is 0.046 [3]).
HAQ-DI, VAS pain and PtGA were assessed at all visits from baseline to week 52. The other PROs were assessed at baseline, and at weeks 4, 8, 12, 16, 24 and 52.

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